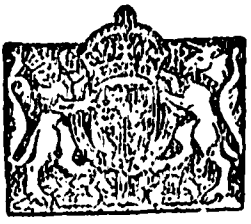

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Public Works Department
Bombay Presidency

10 AUG 1934

Irrigation Administration Report

Part I—Deccan and Gujarat

For the Year 1932-33

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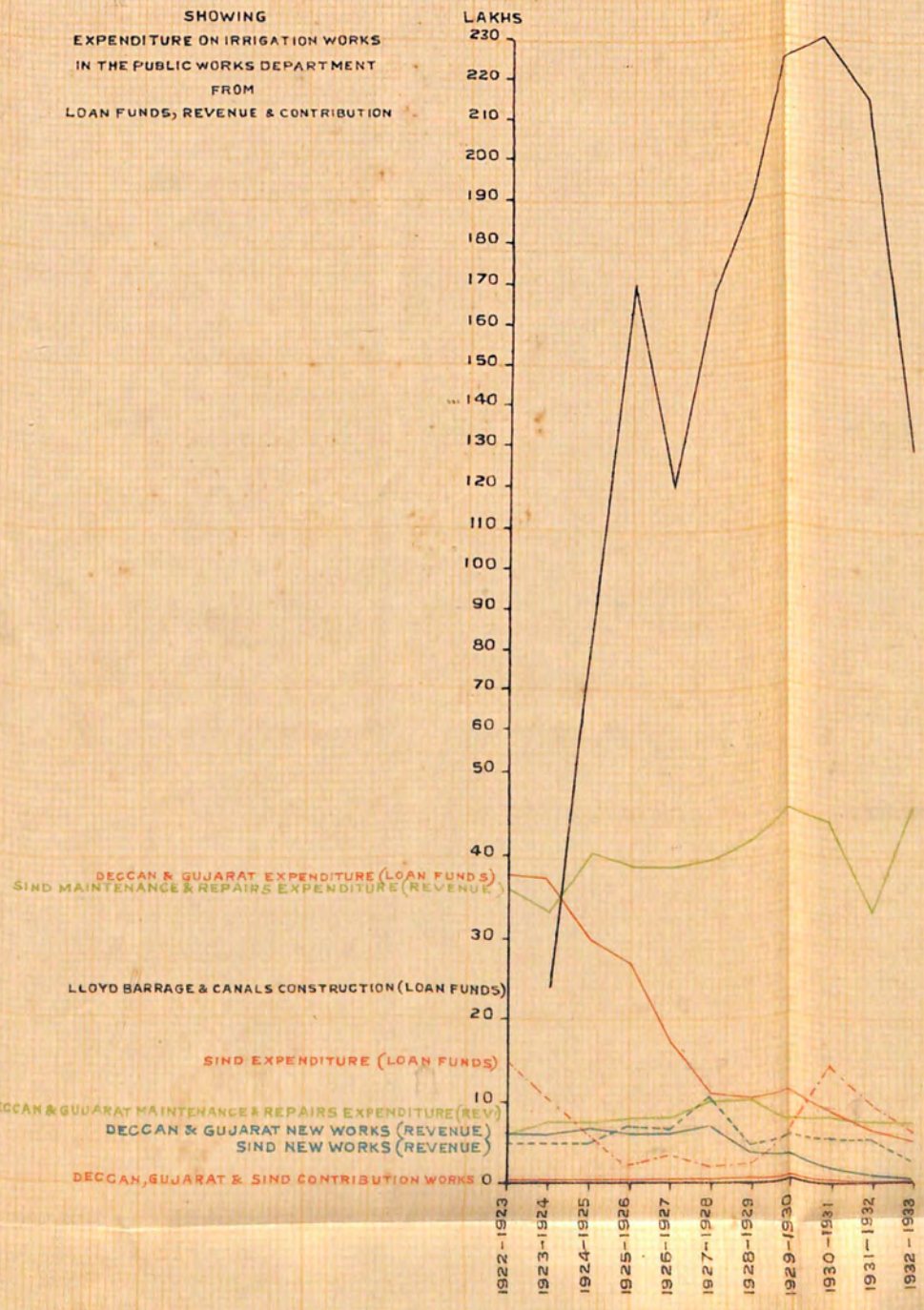
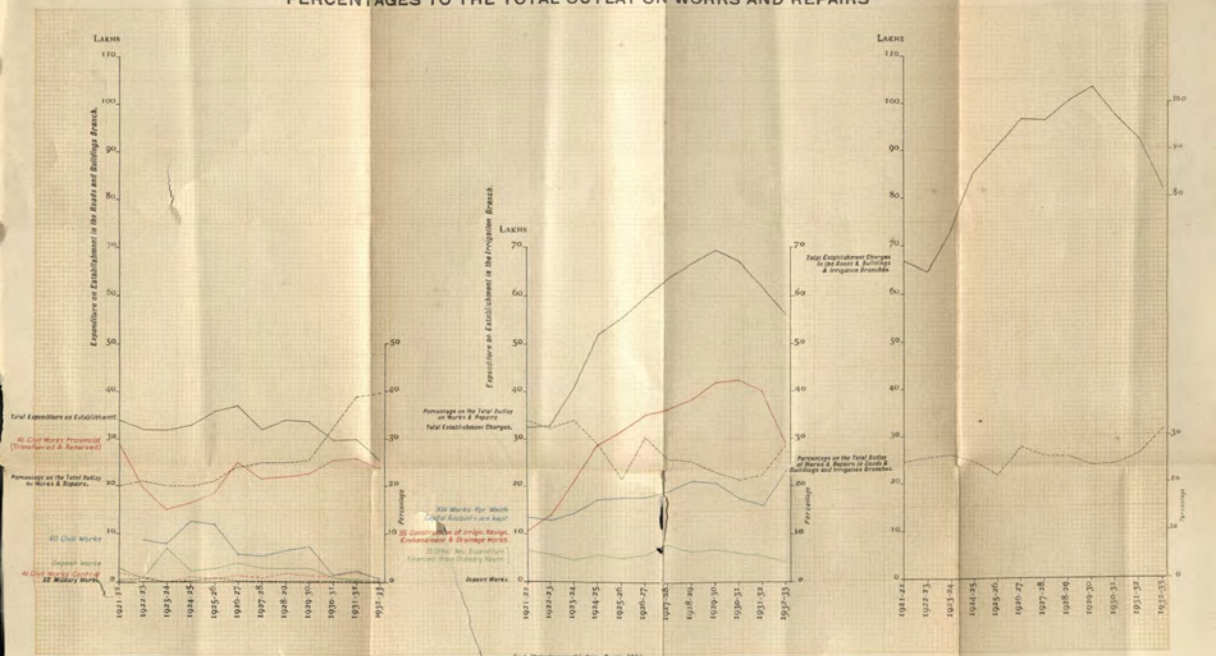
DIAGRAM

SHOWING
EXPENDITURE ON IRRIGATION WORKS
IN THE PUBLIC WORKS DEPARTMENT
FROM
LOAN FUNDS, REVENUE & CONTRIBUTION



G.P.Z.O. Poona, 1934.

DIAGRAM SHOWING EXPENDITURE
ON ESTABLISHMENT
IN THE
ROADS & BUILDINGS & IRRIGATION BRANCHES
OF THE
PUBLIC WORKS DEPARTMENT
AND
PERCENTAGES TO THE TOTAL OUTLAY ON WORKS AND REPAIRS



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Statement showing expenditure on establishment in the Roads and Buildings and the Irrigation Branches of the P. W. D. from the year 1921-22 to 1932-33 and percentage on the total outlay on works and repairs during that period in both the Branches.

Year.	Expenditure on Establishment in the Roads and Buildings Branch.							Expenditure on Establishment in the Irrigation Branch.
	41—Civil Works—Provincial (Transferred and Reserved).	60—Civil Works.	41—Civil Works—Central.	50—Military Works.	Deposit Works.	Total.	Percentage on the total outlay on works and repairs in the Roads and Buildings Branch.	55—Construction of Irrigation, Navigation, Embankment and Drainage Works.
1	2	3	4	5	6	7	8	9
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		Rs.
1921-22 ..	29,06,955	..	1,98,683	45,258	2,84,992	34,35,888	19·26	11,53,734
1922-23 ..	20,14,640	8,34,450	1,78,163	71,481	77,143	31,75,877	20·79	14,20,751
1923-24 ..	15,84,488	8,10,645	67,892	38,560	6,88,354	31,89,939	19·88	21,87,793
1924-25 ..	16,89,892	12,25,632	1,19,721	27,862	2,52,556	33,15,663	19·67	29,10,785
1925-26 ..	18,89,417	12,05,078	1,01,876	69,049	2,58,535	35,23,955	20·66	32,21,647
1926-27 ..	25,30,286	5,97,486	1,68,896	5,882	3,94,389	36,96,939	23·76	35,56,959
1927-28 ..	21,99,448	5,59,107	1,49,132	5,042	2,97,270	32,09,999	24·96	36,98,956
1928-29 ..	22,40,393	6,56,713	2,29,540	2,240	2,56,180	33,85,066	25·03	39,04,670
1929-30 ..	22,45,450	7,33,867	1,56,773	3,638	2,34,897	33,74,625	25·26	42,26,873
1930-31 ..	25,51,711	1,80,139	1,72,163	2,415	85,444	29,91,872	32·35	42,88,966
1931-32 ..	25,93,104	2,32,929	1,22,799	3,182	44,132	29,96,146	38·70	40,37,972
1932-33 ..	23,74,603	71,981	85,143	3,334	17,156	25,52,217	39·79	28,70,427

Year.	Expenditure on Establishment in the Irrigation Branch—*contd.*					Total Establishment charges in the Roads and Buildings and Irrigation Branches.	Percentage on the total outlay of works and repairs in Roads and Buildings and Irrigation Branches.
	XIII—Works for which capital accounts are kept.	15—Other Revenue Expenditure financed from Ordinary Revenues.	Deposit Works.	Total establishment charges.	Percentage on the total outlay on works and repairs in the Irrigation Branch.		
1	10	11	12	13	14	15	16
	Rs.	Rs.	Rs.	Rs.		Rs.	
1921-22 ..	13,85,960	6,68,651	2,770	32,11,115	33·59	66,47,003	24·26
1922-23 ..	13,44,901	5,34,327	1,993	33,01,972	32·22	64,77,849	25·38
1923-24 ..	14,43,222	4,32,013	2,056	40,65,084	33·89	72,55,023	25·87
1924-25 ..	17,37,724	5,26,361	492	51,75,362	28·73	84,91,025	24·35
1925-26 ..	17,99,343	5,19,228	2,681	55,42,899	21·62	90,66,854	21·23
1926-27 ..	18,08,385	5,94,989	3,207	59,63,540	30·56	96,60,479	27·54
1927-28 ..	19,20,773	7,80,312	3,847	64,03,838	26·00	96,13,887	25·64
1928-29 ..	21,35,939	6,16,601	2,750	66,59,960	25·51	1,00,45,026	25·35
1929-30 ..	21,08,302	6,18,312	1,012	69,54,499	23·26	1,03,29,124	23·88
1930-31 ..	18,31,149	5,99,621	1,734	67,21,470	21·60	97,13,342	24·06
1931-32 ..	16,34,011	5,18,627	86	61,90,696	22·40	91,86,842	25·97
1932-33 ..	23,53,971	4,01,329	680	56,26,407	28·54	81,78,624	31·30

NOTE.—The percentage of the establishment charges on the cost of works and repairs in the Irrigation Branch (column 14) is generally higher than that in the Roads and Buildings Branch (column 8). The reason is largely that the establishment charges in the Irrigation Branch include the cost of Special Revenue Establishment employed entirely on "revenue management" work on certain canal systems in Sind and the Deccan which has no connection with the execution of works and repairs, and that these charges also include cost of part of the time of Irrigation establishment spent on revenue management including the *control and distribution of water*, which is debited in the accounts to "revenue management" and not to execution of works and repairs. If these establishment charges debited in the accounts to "revenue management" are deducted from the total cost of establishment in the Irrigation Branch the percentage on the cost of works and repairs will not be so divergent. The increase in the rate per cent. in the R. & B. Branch is mainly due to decrease in outlay on "works" and "repairs". Establishment charges cannot be reduced in the same ratio in which expenditure on works is reduced. A mere overall percentage on expenditure on works is inaccurate.

IRRIGATION ADMINISTRATION REPORT
PART I—DECCAN AND GUJARAT
1932-33

PHYSICAL FEATURES—GENERAL DESCRIPTION OF IRRIGATION.

Irrigation in the Deccan and Gujarat differs materially from that in Sind. Rainfall is available for agricultural operations but is often precarious. Tanks and canals provide irrigation for valuable crops such as sugarcane and also provide a source of supply to other crops when the rainfall is deficient or irregular. The old irrigation works consist chiefly of a few small canals and moderately large tanks, some 12,000 smaller tanks mostly in the southern part and in Gujarat, and of about 400 bandharas in Nasik and Khandesh Districts. The tanks have earthen dams and the larger ones irrigate areas up to 1,300 acres, and the smaller ones up to 500 acres, situated immediately below and in the vicinity of the dams. The chief crop irrigated is rice. The bandharas are masonry weirs built across rivers to head up the water to a level sufficient to irrigate lands on the banks of the streams by means of channels taking off from the flanks of the bandharas. The areas irrigated are up to 800 acres and the chief crops are sugarcane, wheat, bajri and gram. From these small beginnings have evolved the magnificent irrigation works which now form such a conspicuous feature in the Deccan and have so successfully fulfilled their beneficent purpose in banishing the famines which formerly devastated this portion of the Province.

2. The irrigation works in the Deccan are fundamentally different from those in Sind, the Punjab, Egypt or Mesopotamia, where wide alluvial plains have been formed by great deltaic rivers in perennial flow. The Bombay Deccan consists of a sloping table-land running eastward from the ridge of the Western Ghats. These form a ridge running parallel to the sea-coast at a distance from it of 50 to 100 miles; precipitous on the western side, they fall away more gradually to the east. The heaviest rainfall occurs on the peak of the ridge, where anything up to 270 inches of rain is recorded in the four monsoon months. The intensity of the rainfall rapidly decreases as we go eastward from the highest ridge, reaching a figure of 20 or 25 inches at a distance of 100 or 150 miles east of the Ghats. The rivers in the Deccan rise in the valleys close to the ridge, flow in an eastward direction, and are dry or practically so for 7 or 8 months of the year. The line of the Ghats, like the ridge of a roof, divides the rainfall into two parts; one the smaller portion falling westward into the Indian Ocean, and the other flowing through long lengths of tortuous rivers to the east and joining the rivers which reach the

sea on the south-eastern coast of the peninsula. These rivers are in flow during the monsoon months only, and if no artificial means of conserving their waters were provided, the whole monsoon rainfall would be wasted so far as the Bombay Deccan is concerned, and would simply flow away to the sea, benefiting but to a small extent the country traversed.

3. The large irrigation systems in the Deccan are all of the same type. Each depends upon a storage lake near the head of one of the river valleys, where sufficient water is collected during the monsoon to supply the country on either side of the river valley below. The water stored during the rains is let out during the dry months of the year in accordance with requirements ; and at a point on the river, which may be as far as 50 miles from the main storage lake, a 'pick-up-weir' is constructed across the river-course to divert the water into canals which take off on either side of the weir. In one case only, that of Lake Fife at Khadakwasla near Poona, do the canals take off from the flanks of the dam itself. The canals are always constructed at a considerably flatter slope than that of the river, and consequently are able to diverge from the river itself on each side of the valley ; as a rule each canal only irrigates the area between itself and the river.

SECTION I

COMPRISING IRRIGATION WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

Works in operation.

4. The following list includes all the works in operation (43 in number) :—

Serial Number.	Name of Work.	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec.	Whether supply is reliable or dependent on local rain.	Whether storage works completed or proposed.	Remarks.
		Acres.			
1	Hathmati and Khari Cut Canals.	24,000	Dependent on local rain.	No storage work. Bokh reservoir, Chandola tank and Wasai reservoir completed.	The catchment of the Hathmati river is hilly, covered partly with forest and that of Khari is undulating ground at its source and then plain ground with cultivated fields. Supply depends upon the flow in the rivers, and the contents of the Bokh reservoir, Chandola tank and Wasai reservoir.
2	Wangroli Tank ..	3,400	Do. ..	Completed ..	The catchment is ordinary plain ground and cultivated fields.
3	Savli Tank ..	3,000	Do. ..	Do. ..	Ordinary catchment on undulating ground.
4	Saiat Tank ..	2,000	Do. ..	Do. ..	Ordinary catchment on flat ground.
5	Tranza Nagrama Tanks.	800	Do. ..	Do. ..	The Tranza tank has no independent catchment. The Nagrama has a catchment of 1·5 sq. miles. Both are fed by the Matar drainage channel which is not reliable as it seldom flows.
6	Futelao Tank ..	800	Do. ..	Do. ..	Hilly catchment
7	Nira Left Bank Canal including Shetphal Tank.	100,000	Reliable ..	Lake Whiting (Lloyd Dam) completed.	Ghat catchment.
8	Nira Right Bank Canal.	180,000	Do. ..	Do. ..	Do.
9	Mhaswad Tank ..	14,000	Dependent on local rain.	Completed ..	Deccan catchment.
10	Mutha Canals including Matoba Tank.	49,000	Reliable ..	Lake Fife completed.	Ghat catchment.
11	Kasurdi Tank ..	40	Dependent on local rain.	Completed ..	Deccan catchment.
12	Shirsuphal Tank ..	1,150	Do. ..	Do ..	Do.
13	Bhadalvadi Tank ..	1,225	Do. ..	Do. ..	Do.

Serial Number.	Name of Work.	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec.	Whether supply is reliable or dependent on local rain.	Whether storage works completed or proposed.	Remarks.
		Acres.			
14	Godavari Right Bank Canal.	44,000	Reliable ..	Lake Beale completed.	Ghat catchment.
	Godavari Left Bank Canal.	26,000			
15	Girna Left Bank Canal.	9,000	Do. ..	Chankapur Tank completed.	Do
16	Kadwa River Works. Palkhed Canal. Ojhar Tambat Canal. Wadali Canal.	7,680	Do. ..	Waghad Tank completed.	Do.
17	Parsul Tank ..	1,440	Dependent on local rain.	Completed ..	Deccan catchment.
18	Pravara Right Bank Canal.	18,480	Reliable ..	Lake Arthur Hill (Wilson Dam) completed.	Ghat catchment.
	Pravara Left Bank Canal.	64,080			
19	Bhatodi Tank ..	1,461	Dependent on local rain.	Completed ..	Deccan catchment.
20	Ekruk Tank ..	13,070	Do. ..	Do. ..	Do.
21	Koregaon Tank ..	416	Do. ..	Do. ..	Hilly catchment.
22	Ashti Tank ..	3,382	Do. ..	Do. ..	Deccan catchment.
23	Pathri Tank ..	3,094	Do. ..	Do. ..	Hilly catchment.
24	Jamda Canals ..	42,000	Girna river supply not reliable.	Water is issued from the Chankapur Tank when available.	Ghat catchment for a small part and for the rest Deccan catchment.
25	Hartala Tank ..	978	Dependent on local rain.	Completed ..	Deccan catchment.
26	Mhaswa Tank ..	3,256	Do. ..	Do. ..	Do.
27	Shahada Channel ..	2,000	Reliable ..	No storage work ..	Hilly catchment. Supply is perennial.
28	Lower Panjhra River Works.	8,173	Panjhra river supply not reliable.	Mukti Tank completed.	Ghat catchment for one part and Deccan catchment for the rest.
29	Krishna Canal	6,412	Reliable ..	Proposed ..	Ghat catchment
30	Rewari Canal ..	439	Dependent on local rain.	No storage work ..	Deccan catchment.
31	Upper Man River Works.	373	Do. ..	Pingli Tank completed.	Do.
32	Yesla River Irrigation Works.	1,182	Do. ..	Nehr Tank completed.	Do.
33	Chikhli Canal ..	358	Do. ..	No storage work	Do.

Serial Number.	Name of Work.	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec.	Whether supply is reliable or dependent on local rain	Whether storage works completed or proposed.	Remarks.
		Acres.			
34	Maini Tank ..	455	Dependent on local rain.	Completed ..	Deccan catchment.
35	Gadikeri Tank ..	416	Do. ..	Do. ..	Do.
36	Gokak Canal ..	17,627	Reliable ..	Do. ..	Ghat catchment.
37	Muchkundi Tank ..	750	Dependent on local rain.	Do. ..	Deccan catchment.
38	Dambat Tank ..	531	Do. ..	Do. ..	Do.
39	Medleri Tank ..	231	Do. ..	Do. ..	Do.
40	Madag Tank ..	1,418	Do. ..	Do. ..	Ghat and Forest catchment.
41	Asundi Tank ..	303	Do. ..	Do.	Deccan catchment.
42	Dharma Canal ..	For monsoon season 6,580 acres. For rabi nil.	Do. ..	No storage work. The canal takes off from the river itself.	Forest catchment
43	Mavinkop Tank ..	617	Do. ..	Completed ..	Do.

Ekruk tank, Gadikeri tank, Mavinkop tank and Shahada channel are the only productive works and the rest are unproductive.

5. The interest account for the year was as follows :—

	Productive Works.	Unproductive Works.	Total.
	Rs.	Rs.	Rs.
Total interest charges during 1932-33 ..	46,667	43,34,929	43,81,596
Net revenue realised during 1932-33 ..	1,24,829	9,58,870	10,83,699

Net loss, i.e. difference between interest and net revenue—Rs. 32,97,897.

6. The financial results of the year by main heads were as under :—

	Area irrigated.	Revenue realised.			Working expenses.	Net revenue.
		Direct receipts.	Share of land revenue.	Total.		
	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.
Productive	5,739	1 40,323	9,318	1,49,641	24,912	1,24,329
Unproductive	188,699	24,96,350	15,622	25,11,972	15,53,102	9,58,870
Total ..	*194,438	26,36,673	24,940	26,61,613	15,77,914	10,83,699

* Inclusive of 8,876 acres under consolidated assessment.

The gross revenue and the net revenue show increases of Rs. 7,80,494 and Rs. 7,37,862 respectively, as compared with the figures for the previous year.

Area irrigated, revenue etc.

7. The figures of area irrigated, revenue assessed and realised and working expenses, as compared with those of the previous three years are given below :—

Year.	Area irrigated.*	Revenue.		Working expenses.
		Assessment.	Realisations.	
	Acres.	Rs.	Rs.	Rs.
1929-30	246,036	31,63,392	30,29,352	17,13,434
1930-31	228,705	27,67,176	27,03,446	16,20,459
1931-32	207,151	24,22,599	18,81,119	15,35,282
Average ..	227,297	27,84,389	25,37,972	16,23,058
1932-33	194,438	24,42,470	26,61,613	15,77,914

* Inclusive of the area under consolidated water and land assessment.

8. The gross area under command is 1,799,000 acres. The area irrigable at present is 623,000 acres.

9. The state of Revenue collections was as follows :—

Balance of demands unrealised at the commencement of the year			Rs. 25,94,067
Demands of the year—		Rs.	
Rabi, 1931-32		3,64,589	
Kharif, 1932-33		17,51,258	
Miscellaneous receipts		3,98,943	
		—	25,14,790
	Total ..		51,08,857
Deduct—			
Remissions			11,309
	Net Total ..		50,97,548
Amount unrealised at the close of the year ..			24,58,357
		Rs.	Rs.
Actual receipts of the year ..		26,39,191	
Add—			
Share of land revenue		24,940	
		—	26,64,131
Deduct—			
Refunds of revenue			2,518
Revenue realised			26,61,613

The remissions and refunds together amounted to Rs. 13,827. Unrealised irrigation revenue at the close of the year amounted to Rs. 24,58,357, which is made up as follows :—

	Rs.
Ekruk Tank	16,846
Hathmati and Khari Cut Canals	85,020
Bhadalwadi Tank	10,280
Krishna Canal	91,470
Ashti Tank	32,331
Mutha Canals and Matoba Tank	3,28,274
Gokak Canal	29,963
Mhaswad Tank	49,613
Nira Left Bank Canal and Shetphal Tank ..	6,03,043
Kadwa River Works	42,590
Savli Tank	10,511
Chankapur Tank—Girna Left Bank Canal ..	43,503
Godavari Canals	3,96,415
Nira Right Bank Canal	2,93,872
Pravara River Works	3,84,689
Other Works	39,937
Total ..	24,58,357

Working expenses.

10. The working expenses of the year amounted to Rs. 15,77,914 compared with Rs. 15,35,282 during the previous year. The following table compares the charges under the principal heads with those of the previous three years :—

	1929-30.	1930-31.	1931-32.	1932-33.
	Rs.	Rs.	Rs.	Rs.
Works	36,036	43,302	11,619	11,124
Repairs	5,22,663	5,24,613	5,31,321	5,31,747
Establishment	10,72,593	9,79,960	9,38,363	9,64,429
Tools and Plant	13,053	9,799	8,567	10,023
Total in the Public Works Department ..	16,44,345	15,57,674	14,89,870	15,17,323
Collection charges	63,402	57,111	39,988	55,172
Indirect charges	5,687	5,674	5,424	5,419
Total working expenses ..	17,13,434	16,20,459	15,35,282	15,77,914

Details of working expenses.

11. The following table gives the details of working expenses for some of the principal works :—

Name of work.	Average incidence of water rate per acre.	Cost of measurement.		Working expenses in the P. W. Department.	
		Total cost.	Per acre.	Per mile of main canal.	Per acre irrigated.
	Rs.	Rs.	Rs. a. p.	Rs.	Rs.
Nira Left Bank Canal and Shetphal Tank	11·71	1,390	0 0 5	2,871	5·75
Pravara Canals	17·91	334	0 0 6	2,115	11·93
Girna Left Bank Canal	7·61	532	0 1 6	2,680	8·80
Godavari Canals	16·27	262	0 0 7	2,830	20·74
Mutha Canals and Matoba Tank ..	15·85	941	0 1 4	1,117	8·70
Kadwa River Works	8·62	153	0 0 7	1,450	8·36
Mhaswad Tank	3·89	141	0 0 3	..	1·82
Nira Right Bank Canal	5·12	1,026	0 0 9	1,568	11·66
Krishna Canal	17·16	686	0 2 6	680	4·66
Yerla River Irrigation Works ..	5·60	160	0 0 11	576	7·17
Upper Man River Works.. ..	5·25	68	0 1 4	509	11·51
Jamda Canals	3·89	17	0 0 1	112	4·27
Ekruk Tank	5·62	149	0 0 8	407	5·78
Ashti Tank	4·84	144	0 0 8	591	5·12
Maini Tank	4·24	81	0 0 11	577	3·62
Gokak Canal	6·44	480	0 1 1	283	2·12
Dharma Canal	5·49	210	0 8 4	69	0·33

Gross assessed revenue.

12. The gross assessed revenue, direct and indirect, amounted to Rs. 24,42,470 compared with Rs. 24,22,599 of the previous year. The details of the gross assessment are as under :—

	Direct revenue.			Indirect revenue.	Total.
	Water rates.	Other receipts.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.
Productive	20,790	1,12,199	1,32,989	10,490	1,43,479
Unproductive..	19,96,158	2,86,744	22,82,902	16,089	22,98,991
Total ..	20,16,948	3,98,943	24,15,891	26,579	24,42,470

The net assessed revenue of the year, after deducting working expenses (Rs. 15,77,914), amounted to Rs. 8,64,556, compared with Rs. 8,87,317 during the previous year.

13. The following table gives the percentage return earned during the year on capital outlay on the principal works in operation :—

Name of work.	Total capital outlay (direct and indirect).	Gross receipts (direct and indirect).	Working expenses (direct and indirect).	Net revenue.	Percentage return on capital outlay.
	Rs.	Rs.	Rs.	Rs.	Rs.
Ekruk Tank	13,40,386	1,37,237	19,571	1,17,666	8·78
Hathmati and Khari Cut Canals ..	13,18,729	62,923	35,876	27,047	2·05
Nira Left Bank Canal and Shetphal Tank.	1,34,12,240*	6,89,834	3,06,573	3,83,261	2·85
Nira Right Bank Canal ..	4,06,72,875	76,670	2,55,191	—1,78,521	..
Mhaswad Tank	20,96,016	18,738	16,457	2,281	0·11
Mutha Canals and Matoba Tank ..	68,72,909	4,04,802	98,330	3,05,752	4·44
Godavari Canals	1,04,31,658	3,57,601	3,45,299	12,302	0·12
Chankapur Tank—Girna Left Bank Canal.	20,56,431	53,624	49,876	3,748	0·18
Kadwa River Works	10,35,876	43,079	34,982	8,097	0·78
Pravara River Works	1,50,07,048	4,88,322	2,43,531	2,44,791	1·63
Lower Panjhra River Works ..	4,68,621	28,126	4,299	23,827	5·08
Krishna Canal	9,49,807	77,877	23,995	53,882	5·67
Gokak Canal	14,66,673	71,083	16,262	54,821	3·73

* Inclusive of proportionate expenditure on the old Bhatgar Dam and the new Lloyd Dam.

14. The average water rates per acre of land actually irrigated were :—

	Rs.
Productive works	5·64
Unproductive works	10·97

15. The water rate assessments and other receipts compared with those of the previous year as under :—

	1931-32	1932-33
	Rs.	Rs.
Water rates	19,61,380	20,16,948
Other receipts—		
Plantations	6,669	9,109
Water power	14,353	14,453
Miscellaneous	4,12,536	3,75,381
Total ..	4,33,558	3,98,943
Share of land revenue ..	27,661	26,579
Grand Total ..	24,22,599	24,42,470

16. The principal crop acreages irrigated during 1931-32 and 1932-33 are given below :—

Crop acreages.

	1931-32	1932-33
	Acres.	Acres.
Gardens and orchards ..	5,258	5,218
Sugarcane	30,450	34,149
Wheat	12,677	13,630
Rice	17,294	9,485
Jowar	39,821	29,925
Bajri	12,046	8,303
Gram, etc.	18,500	9,183
Groundnut	10,992	12,288
Cotton	9,746	16,429
Condiments	7,457	7,617

The total estimated value of the crops irrigated was Rs. 130·85 lakhs against Rs. 127·78 lakhs during the previous year.

17. The following table shows the total number of ordinary wells in actual use, total area irrigated by them etc., in the Deccan and Gujarat :—

Total number of ordinary wells in actual use.	Total area irrigated by wells shown in column 1 during 1932-33.	Total number of wells in working order but not used.	Total number of abandoned wells.
1	2	3	4
	Acres.		
3,03,104	662,614	52,599	53,077

DETAILED REPORTS BY LOCAL OFFICERS.

NORTHERN CIRCLE.

18. The year under review was marked by a monsoon which broke about the 3rd week of June and terminated by the end of October. The rainfall being copious in the beginning but deficient at the end of the season, was unfavourable to rice crops, and this resulted in a heavy demand for water from the canals and tanks. As the supply in the Hathmati River was deficient and also as the tanks had been only partially filled the whole area under command could not be protected.

The rainfall gauged at Ahmedabad and at Prantij was 41·04 and 24·61 inches respectively as compared with 31·82 and 29·31 inches, the average of the last three years. At Bareja, which is situated in the centre of the area irrigated from the Khari Cut Canal, the rainfall was 23·51 inches as compared with 25·62 inches, the average of the last three years ; while at Himatnagar, where the Head works of the Hathmati Canal are situated, it was 26·69 inches against 29·02 inches, the average of the last three years.

19. The principal irrigation works in operation in this Circle are (1) Hathmati and Khari Cut Canals, (2) Wangroli Tank, (3) Tranza Nagrama Tanks, (4) Savli Tank, (5) Saiat Tank and (6) Futelao Tank.

[No. (1) is a work which does not include any arrangement for storage and thus these canals depend solely on rainfall for their water supply.]

The six works are financially unproductive, the annual revenue derived therefrom being generally insufficient to cover their working expenses.

AHMEDABAD AND KAIRA AND PANCH MAHALS DIVISIONS.

HATHMATI AND KHARI CUT CANALS.

20. This is the most important canal system in Gujarat. The Hathmati Canal irrigates a tract of land lying between the Sabarmati and Khari rivers, and this system, in addition to irrigating the area dependent on it, is designed to pass surplus water, when available, partly into the Bokh reservoir and partly into the Khari river. The Bokh reservoir does not provide any direct irrigational supplies but only acts as a storage work for the Khari Cut Canal. Further downstream on the Khari are situated two small irrigation systems and these utilise the natural flow of the river and also any surplus water which can be made available from the Hathmati Canal; the Khari water is abstracted at the socalled "Khari Sluices" for direct irrigational purposes, while the surplus water from the Hathmati is diverted through an artificial Cut, called the Khari Cut, into a natural channel and this in its turn supplies a system of distributaries, several small tanks, and the large Chandola tank near Ahmedabad. The system was first opened in 1873-74 and has cost more than Rs. 13 lakhs.

21. The Hathmati river was in flood from 16th to 17th July. The greatest depth of water over the weir was 1 foot 10 inches with a corresponding discharge of 2,869 cusecs. Out of 73 cusecs, the average daily discharge of the canal at its head during the Kharif Season, only 43 cusecs were utilised for irrigation, the balance being let down to the Bokh Reservoir and the Bhujwa Channel for supplying irrigation under the Khari Cut Canal. During the rabi season an average daily discharge of only 11 cusecs was obtained from the river for irrigational purposes.

22. The Khari river was in flood at Raipur on the 22nd and 30th June and 16th, 20th and 26th July, but the duration of each flood being very short no water was admitted into the Khari Cut Canal.

23. The area irrigated, revenue assessed, the average water rate and the working expenses under the Hathmati and Khari Cut Canals, as compared with the average of the preceding three years, are given below :—

	Kharif.		Rabi.		Total.		Working expenses.
	Area irrigated.	Assessment.	Area irrigated.	Assessment.	Area irrigated.	Assessment.	
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs
Average	8,017	39,505	2,070	5,825	10,087	45,330	37,995
1932-33	2606	11,437	393	1,118	2,989	12,555	35,876

24. The remissions sanctioned during the year amounted to Rs. 3,085. The gross revenue realised from all sources amounted to Rs. 61,462 while the working expenses were Rs. 35,876, and these figures show a gross return of 1·94 per cent. on the total capital outlay. If the interest charges for the year, amounting to Rs. 41,416, are taken into account the result shows a loss amounting to Rs. 15,830.

The construction of the Lambha branch of the Khari Cut Canal, estimated to cost Rs. 3,682, was in progress during the year.

First Class Irrigation Tanks in Gujarat.

25. The five first class tanks mentioned below were constructed between the years 1904 and 1917 at an aggregate cost of Rs. 11 lakhs. They rarely yield any net return as the demand for water from them is small in years of good rainfall, while in years of scarcity the tanks themselves store deficient supplies. The Futelao Tank is in the Panch Mahals Collectorate, while the other works are in the Kaira Collectorate.

26. The area irrigated, revenue assessed, and the working expenses on the tanks during the year are compared with the average of the previous three years below :—

Name of tank.	Year.	Kharif.		Rabi.		Total.		Working expenses.
		Area irrigated.	Assessment.	Area irrigated.	Assessment.	Area irrigated.	Assessment.	
1	2	3	4	5	6	7	8	9
		Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
Wangroli.. ..	Average ..	1,514	7,418	181	743	1,695	8,166	7,265
	1932-33 ..	2,019	9,710	83	310	2,102	10,020	7,699
Savli	Average ..	1,807	8,686	1	3	1,808	8,689	6,698
	1932-33 ..	2,145	10,831	2	8	2,147	10,839	6,312
Soiat	Average ..	857	3,358	51	203	908	3,561	4,395
	1932-33 ..	498	1,957	..	..	498	1,957	4,415
Tranza Nagrama ..	Average ..	6	22	1	2	7	24	2,072
	1932-33 ..	..	..	..	..	..	..	2,184
Futelao	Average ..	7	59	42	133	49	197	1,357
	1932-33 ..	2	3	48	144	50	147	1,417

Wangroli Tank.

27. The rainfall gauged at the site of the tank was 25·85 inches during the year compared with 37·18 inches, the average of the previous three years. The tank filled partially and water was utilised in irrigating both Kharif and Rabi Crops (mainly rice, wheat and gram). The surplus water stored from the previous year was utilised in irrigating the hot weather crops. The miscellaneous revenue realised during the year amounted to Rs. 1,512 compared with Rs. 1,052 received during the previous year.

Savli Tank.

28. The rainfall gauged at the site of the tank was 32·53 inches during the year compared with 33·36 inches, the average of the previous three years. The tank filled partially and water was utilised in irrigating kharif crops, mainly rice. The miscellaneous revenue realised during the year was Rs. 1,499 compared with Rs. 1,175 received during the previous year.

Saiat Tank.

29. The rainfall gauged at the site of the tank was 29·93 compared with 36·68 inches, the average of the previous three years.

The tank was partially filled and water was utilised in irrigating the kharif crops, mainly rice. The miscellaneous revenue realised during the year amounted to Rs. 810 against Rs. 893 received in the previous year.

Tranza Nagrama Tanks.

30. The rainfall gauged at Nagrama was 29·97 inches and it was approximately the same at Tranza. The average rainfall for the past three years was 25·71 inches. The tanks did not fill during the year. The miscellaneous revenue realised amounted to Rs. 2,860 against Rs. 816 received in the previous year. The increase was due to the larger area cultivated in the tank bed.

Futelao Tank.

31. The rainfall gauged at the site of the tank was 26·25 inches against 28·23 inches, the average of the previous three years. The tank filled to within 6 inches of the F. S. L. The rains in the neighbourhood of the tank were adequate and hence there was practically no demand for water in the kharif season and the supply available was utilised for rabi irrigation. There was no hot weather irrigation before the monsoon. The miscellaneous revenue realised during the year was Rs. 127 against Rs. 81 obtained during the previous year.

32. The percentage returns obtained during the year from the working of these tanks were as under :—

Name of tank.	Gross assessment.	Gross realisations.	Working expenses.	Net revenue.	Capital outlay direct and indirect to end of 1932-33.	Percentage return.
	Rs.	Rs.	Rs.	Rs.	Rs.	
Wangroli	11,532	11,982	7,699	4,283	2,93,295	1·46
Savli	12,338	10,464	6,312	4,152	2,55,210	1·63
Saiat	2,767	3,496	4,415	— 919	1,84,029	—0·49
Tranza Nagrama ..	2,660	2,928	2,184	744	2,80,635	0·27
Futelao	274	221	1,437	—1,216	1,16,461	—1·04

DECCAN IRRIGATION CIRCLE.

33. As a result of the recommendation of the Reorganisation Committee the Irrigation Development and Research Circle was abolished in March 1933, and the work of this Circle distributed among the several divisions of the Deccan Irrigation Circle. The divisions comprising the Deccan Irrigation Circle are now as under :—

(1) Nasik Irrigation Division.
(2) Poona Irrigation Division.
(3) Ahmednagar Division.
(4) Nira Right Bank Canal Division.
(5) Irrigation Research Division.

The Research and Development work which was formerly carried out by the late Special Irrigation Division has been entrusted to the Irrigation Research Division and this work is described in Section III of this Report.

34. Good ante-monsoon showers were received in the Nira and Godavari Canal tracts and they were useful for starting preliminary agricultural operations. The regular monsoon commenced in the second week of June. The early rains were insufficient and the sowing of kharif and two seasonal crops had to be carried out with the help of canal water. The rainfall was above normal in the Pravara Canals area and normal in the Girna and Kadva Canal tracts.

35. Low prices for all agricultural commodities were prevalent throughout the whole year under report but in spite of this the cultivation of cotton and groundnut is gradually increasing on the Nira Right Bank Canal.

36. Sugar factories have now been established on the Nira Right and Left Bank Canals, Girna Left Bank Canal, Pravara Left Bank Canal and Visapur Tank. The slump in the price of sugarcane products and the increase in working costs during recent years have caused considerable anxiety and investigations are afoot with a view to discovering means of counteracting these adverse conditions.

37. The total area irrigated in this Circle during the year was 1,45,716 acres against 1,46,726 acres during the previous year while the gross revenue amounted to Rs. 19·50 lakhs against Rs. 18·54 lakhs last year.

NIRA RIGHT BANK CANAL DIVISION.

Lloyd Dam at Bhatgar and Nira Right Bank Canal.

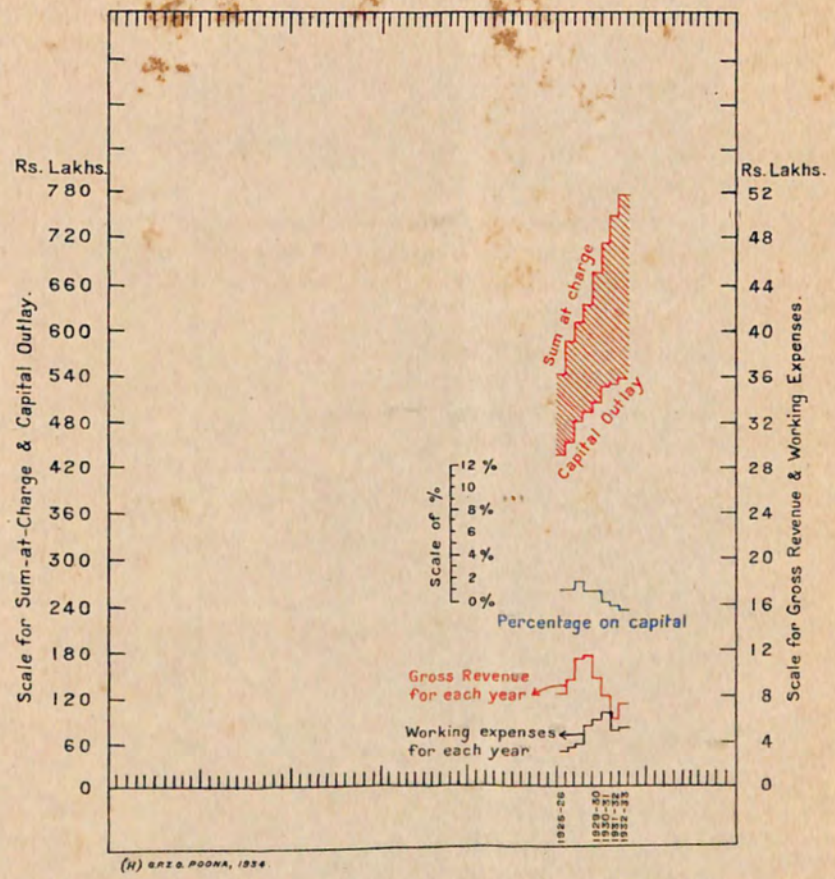
38. The Nira Right Bank Canal is the largest canal in the Deccan. The original estimate of the project framed in 1910 provided for (*i*) raising the dam at Bhatgar by 60 feet so as to increase its storage capacity from 5,300 million cubic feet to 24,000 million cubic feet, (*ii*) a canal 109 miles long on the right bank of the Nira river, having a capacity at head of 1,500 cusecs, and (*iii*) widening the existing Nira Left Bank Canal in order to increase its discharge from 450 to 760 cusecs. The total cost was estimated at about Rs. 258 lakhs and the area to be irrigated annually at 190,000 acres. The project was submitted to the Government of India

FINANCIAL RECORD.

FOR

Nira Right & Left Bank Canals.

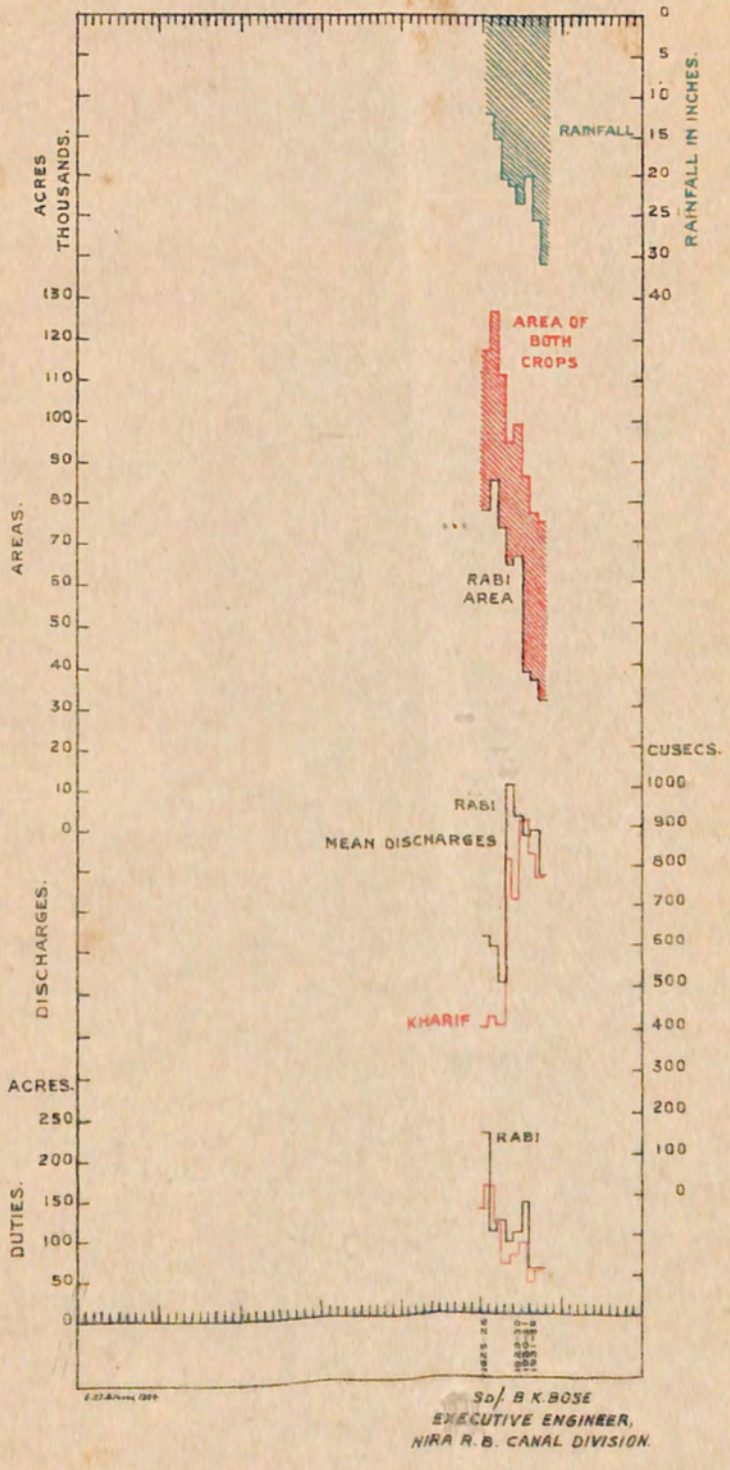
1925-1933.



Sd/. B. K. BOSE.
28-11-33

Executive Engineer,
Nira R. B. Canal Division.

WORKING RECORD
FOR
NIRA RIGHT & LEFT BANK CANALS
1925 - 1933.



Sd/- B K BOSE
EXECUTIVE ENGINEER,
NIRA R.B. CANAL DIVISION.

in May 1911, sanctioned by the Secretary of State in June 1912 and the work was started in the same year. Before undertaking the raising of Bhatgar Dam, a thorough investigation was made into its design and the estimates for this work with the result that it was decided, on technical grounds, to abandon the original proposal for raising the dam and to construct an entirely new structure in place of the old dam. Owing to this change, and to the unprecedented rise in the cost of labour and materials, which took place from about the year 1916 in consequence of the Great War, a revised estimate amounting to Rs. 491 lakhs was framed in 1920, and it was submitted to the Government of India in September 1921. The revised project provided for (*i*) a new dam at Bhatgar to increase the storage from 5,300 million cubic feet to 24,000 million cubic feet, (*ii*) a canal on the right bank of the Nira river 106½ miles long and (*iii*) the expenditure of Rs. 3¾ lakhs already incurred on widening the Nira Left Bank Canal. It was anticipated that 132,000 acres would be irrigated annually as a result of this scheme and that the gross revenue would amount to Rs. 15·22 lakhs and the net revenue to Rs. 11·92 lakhs, giving a return of 2·4 per cent. on the capital outlay. The revised project was sanctioned by the Secretary of State in June 1922.

39. The Lloyd Dam at Bhatgar, 190 feet high, 5,333 feet long including the waste weir (4,266 feet long excluding the waste weir) and 124 feet wide at the base, was completed in 1928 at a cost of Rs. 172 lakhs. It is one of the largest dams in the world and contains 21½ million cubic feet of masonry. The lake formed by the construction of the dam supplies water both to the old Nira Left Bank Canal and the new Nira Right Bank Canal, and it has a length of 17 miles at full supply level with a corresponding storage capacity of 24,000 million cubic feet. The catchment area is 128 square miles with an annual rainfall varying from 250 inches in the Ghats to 40 inches at Bhatgar. In addition to the sluices required for releasing water for irrigation purposes, there are 81 waste weir gates which control and regulate the flood level in the lake.

40. Practically all the deep cutting and high banks in connection with the construction of the Nira Right Bank Canal have been completed. The progress on branches and distributaries was satisfactory. Water was first supplied from the canal for rabi crops in 1924–25. The canal commands lands in Satara District, Sholapur District, and Phaltan State, and it ends near Mohod in the Sholapur District, the total length being about 106½ miles. The designed discharges of the canal at head and at tail (take-off of Branch No. 3) are 1,500 and 414 cusecs respectively, the corresponding full supply depths being 8 feet and 6·5 feet. The culturable area commanded is 448,000 acres of which 132,000 acres will be irrigated annually when full development is reached. The distribution system is being constructed on up-to-date principles while the latest types of measuring devices are being provided at distributary heads and at frequent intervals on the channels. The whole perennial area commanded by the canal has been carefully surveyed and the necessary soil classification has been carried out before designing the channels, while the areas considered to be unsuitable for the cultivation of perennial crops have been determined and indicated on maps.

41. On 1st April, the level of the water in Lake Whiting (the lake formed by the construction of the Lloyd Dam) was 121·78 feet above the sill of the sluices, the corresponding contents being 24,198 million cubic feet, and this level was maintained till 16th September when the draw-off for irrigation commenced. On the 31st March the water level was 104·6 feet above the sill of the sluices, the corresponding contents being 10,967 million cubic feet. The run-off from the catchment of the lake (128 square miles) amounted to 33,901 million cubic feet. The rainfall gauged at Bhatgar during the year was 61·87 inches, while the rainfall in the canal tract averaged 30·65 inches.

42. The following table gives the results of irrigation, revenue etc., during the year as compared with the average of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue from all sources.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
21,894	18,416	1,12,087	1,11,158	1,17,723	1,1[illegible],714

Working expenses.		Realisations.		Rainfall.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
2,55,191	2,48,023	76,670	98,530	30·65	22·60

The area under sugarcane during the year was 1,905 acres and the area of two-seasonal or rabi leases was 10,229 acres. The area of perennial blocks sanctioned and irrigated during the year amounted to 3,121 acres against 2,058 acres during the previous year. The remissions sanctioned during the year amounted to Rs. 118 and refunds to Rs. 11. The cost of the measuring establishment amounted to Rs. 1,026, which shows a rate of about 9 pies per acre against 5 pies per acre in the previous year. The expenditure incurred on maintenance and repairs was Rs. 51,155.

Mhasvad Tank.

43. This irrigation tank is formed by an earthen dam built across the Man river, the dam being 9,000 feet long and 80 feet high at its highest point. The storage capacity is 2,602 million cubic feet and the tank supplies water for the irrigation of lands in Sholapur District, although it is situated on the eastern border of Satara District. The capacity of the tank is considerable but the supply is not reliable owing to the precarious nature of the rainfall in the catchment. The designed discharges of the two Mhasvad Canals at their heads are 180·7 and

176·93 cusecs with full supply depths of 4 feet and 3 feet respectively. It is intended to utilise the discharge available from these canals to supplement the supply at the tail of the Nira Right Bank Canal (Branch No. 3) when this reach of the canal is ready to receive the extra water, and the Mhasvad Canal system will then cease to exist as a separate entity and it will be merged into the Nira Right Bank Canal system.

44. On 1st April the level of the water in the bank was 18·7 feet above the sill, the corresponding contents being 1,756 million cubic feet. Replenishment started from 21st June and by the commencement of the rabi season the level rose to its full supply level of 24 feet above the sill of the outlet, the contents being 2,601 million cubic feet; the waste weir overflowed from 23rd August. The supply available made it possible to meet in full the demands of the rabi season. On 31st March the level of water in the tank was 18·65 feet, the contents then being 1,749 million cubic feet. The average rainfall in the catchment of the tank (480 square miles) was 24·96 inches and the run-off amounted to 5,317 million cubic feet, while the average rainfall in the canal tract was 20·89 inches.

45. The following table shows the results of irrigation, revenue, etc., during the year as compared with the average of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue from all sources.	
1932–33.	Average.	1932–33.	Average.	1932–33.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
9,031	4,920	35,186	34,468	37,744	43,001

Working expenses.		Realisations.		Rainfall.	
1932–33.	Average.	1932–33.	Average.	1932–33.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
16,457	21,113	18,738	39,932	20·89	21·01

46. The area under sugarcane on seasonal passes was 120 acres. The refunds sanctioned during the year amounted to Rs. 252 and remissions to Rs. 15,774. The cost of measuring establishment was 3 pies per acre as against 4 pies per acre during the previous year.

POONA IRRIGATION DIVISION.

Nira Left Bank Canal.

47. This canal which came into operation in 1885–86 is one of the pioneer irrigation works in the Deccan and protects a tract in the Poona District which has a very precarious rainfall. The original scheme consisted of (*a*) a ghat-fed storage tank at Bhatgar (Lake Whiting), about

32 miles south of Poona on the Yelwandi river, impounding 5,300 million cubic feet of water, (*b*) a pick-up weir at Vir on the Nira river about 17 miles downstream from Bhatgar, (c) a canal about 100 miles long irrigating about 80,000 acres annually, and (*d*) the Shetphal Tank at the tail of the canal with an effective capacity of 592 million cubic feet, which tank is used for storing a portion of the surplus monsoon discharge. The original masonry dam, 127 feet high, is now replaced by the higher Lloyd Dam mentioned above. The canal commands a gross area of 201,000 acres, while the area commanded by the Shetphal Tank is 23,500 acres. The canal originally had a capacity of 456 cusecs and is now being remodelled to carry a discharge of 720 cusecs.

Nira Valley Development Project.

48. This project was designed for the complete development of irrigation in the Nira Valley : it provided for the widening and remodelling of the Nira Left Bank Canal in order that this canal could irrigate an additional area of 19,000 acres and the construction of a new dam at Vir designed to supplement the storage of 24,000 million cubic feet impounded by the Lloyd Dam at Bhatgar. The construction of the Vir Dam, estimated to cost about a crore of rupees, has now been abandoned as it is considered that by economical distribution of the water available the storage at Bhatgar will be sufficient to meet all irrigation requirements in the Nira Valley, both on the old Nira Left Bank Canal and the new Right Bank Canal. The remodelling of the Nira Left Bank Canal which was started in 1925–26 has made considerable progress, and during the year under report, the work of remodelling of distributaries was in progress, the total expenditure incurred being Rs. 95,831. The remodelling will be completed by 1936–37.

49. The rainfall at Bhatgar during the year was 61·87 inches while the average rainfall in the canal tract was 34·15 inches, this being very satisfactory and far above the average in both the catchment area and the canal tract. The rainfall in the rabi season also was good and timely. The water in the Shetphal Tank reached its lowest level of 23 feet on 30th May the corresponding contents being 186 million cubic feet, and replenishment from the canal commenced on that date, the water in the tank reaching its highest level of 37 feet on 13th August, the contents then being 573 million cubic feet.

50. The following table gives the results of irrigation, revenue, etc., during the year as compared with the average of the previous three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue from all sources.	
1932–33.	Average.	1932–33.	Average.	1932–33.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
53,387	64,713	6,25,086	7,52,347	6,33,307	7,56,382

Working expenses.		Realisations.		Rainfall.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
3 06,573	3,62,882	6,89,834	6,39,518	32·15	23 56

51. The area under perennial blocks was 19,340 acres on the Nira Left Bank Canal and 2,019 acres on the Shetphal Tank, while the area of two-seasonal blocks amounted to 16,192 acres on the Nira Left Bank Canal and 985 acres on the Shetphal Tank. The remissions sanctioned during the year amounted to Rs. 405. The cost of the measuring establishment was Rs. 1,390, which gives a rate of about 5 pies per acre against 6 pies per acre in the previous year. The expenditure incurred on maintenance and repairs amounted to Rs. 68,747 and that on extensions and improvements to Rs. 1,092. The sugar factory at Kalamb was started during the year.

Mutha Canals.

52. This system came into operation in 1874–75. The canals were constructed at a cost of about Rs. 65½ lakhs including a large Ghat-fed storage reservoir (Lake Fife) on the Mutha river at Khadakvasla about 12 miles from Poona. The dam which is of masonry is 107 feet high, spans the valley of the Mutha river, and the lake has a very reliable catchment. The lake supplies drinking water for Poona as well as water for irrigation, and the system comprises two canals, the Mutha Right Bank and Mutha Left Bank, 70 and 18 miles long, respectively. The maximum designed discharges of the two canals at their heads are 412 and 38·5 cusecs respectively, and both the canals take off direct from the lake which has a storage capacity of 3,955 million cubic feet, of which 508 million cubic feet are reserved for the Poona water supply as a margin of safety in the event of replenishment occurring later than is normal. The Matoba Tank is a tail tank receiving its supply from the Mutha Right Bank Canal during the monsoon months. The Mutha Canals, particularly the Right Bank Canal, play a very important part in the welfare of Poona City and the surrounding country. They supply the Cantonment and the City with drinking water and have not only supplied, and continue to supply water for the irrigation of ordinary crops but also have fostered the cultivation of fruit, vegetables, fodder and sugarcane within easy reach of this large city and important military station. The supply available in Lake Fife is, however, insufficient to meet the increasing demands on it and a project has been prepared for increasing the storage and for the remodelling and the extension of the Right Bank Canal.

53. On 1st April the level of water in Lake Fife was 21·8 feet above the sill of the canal sluices, the corresponding contents being 1,875 million cubic feet. The lowest level of 9·2 feet was reached on 24th June, the contents then being 662 million cubic feet. The draw-off for irrigation

commenced on 1st November, when water was at its full supply level of 34 feet and the contents of the lake were 3,643 million cubic feet. On 31st March, the level of water was 19·75 feet, the corresponding contents being 1,640 million cubic feet. The run-off from the catchment of the lake (196 square miles) amounted to 52,987 million cubic feet, while the rainfall gauged at Khadakvasla was 50·75 inches, and that in the canal tract 27·27 inches : On 1st April, the level of water in Matoba Tank was 17·4 feet, the corresponding contents being 52 million cubic feet. The tank was dry from 18th May to 5th July. Replenishment from the Mutha Right Bank Canal commenced on 6th July, and the tank reached its full supply level of 29 feet on 30th August while the replenishment continued up to 13th September. Further replenishment was received on 28th September and the tank again reached its full supply level which was maintained till 9th October. A third and last replenishment was received : the full supply level was obtained on 19th October and this was maintained up to 9th November, the contents then being 220 million cubic feet. On 31st March the level of the water in the tank was 13·2 feet, the corresponding contents being 29 million cubic feet.

54. The following table shows the results of irrigation, revenue, etc., during the year as compared with the average of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue from all sources.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
11,299	14,230	1,79,015	2,30,575	3,57,455	4,03,131

Working expenses.		Realisations.		Rainfall.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
98,330	1,08,273	4,04,082	3,87,118	27·27	21 03

55. The area of sugarcane under the Mutha Canals was 4,372 acres while that of two-seasonal leases under the Mutha Canals and Matoba Tank amounted to 889 and 1,625 acres respectively. The perennial section of the Mutha Right Bank Canal ends at mile 23·5, while the whole length of the Left Bank Canal receives perennial supplies. The quantity of water supplied during the year to the Poona Cantonment and Poona City Municipality was 1,114 million gallons and 2,998 million gallons, respectively, the revenue obtained therefrom being Rs. 44,563 and Rs. 1,19,901, respectively. The cost of the measuring establishment amounted to Rs. 941, which gives a rate of 1 anna 4 pies per acre against

1 anna 6 pies per acre in the previous year. The expenditure incurred on remodelling the first 11 miles of the Mutha Right Bank Canal during the year under report was Rs. 41,144. The expenditure incurred on extensions and improvements and maintenance and repairs amounted to Rs. 1,749 and Rs. 33,610, respectively. The refunds sanctioned during the year amounted to Rs. 137 and remissions to Rs. 511.

KASURDI TANK.

56. This tank, which remained empty from 6th January 1932, received replenishment on 18th June and dried up on 23rd June. It received a second replenishment on 3rd August, and overflowed from 28th August to 22nd January, and again dried up on 27th January.

SHIRSUPHAL TANK.

57. On 1st April, the level of water in the tank was 26·4 feet, the contents being 215 million cubic feet. The lowest level of 22·55 feet was reached on 20th August, the contents then being 134 million cubic feet. The water in the tank reached its highest level of 30·22 feet on 20th November, the contents then being 329 million cubic feet. On 31st March the level of water in the tank was 25·4 feet, the contents then being 191 million cubic feet.

BHADALWADI TANK.

58. On 1st April, the level of water in the tank was 28·95 feet, the corresponding contents being 112 million cubic feet. The lowest level of 25·24 feet was reached on 18th June, the contents then being 73 million cubic feet. The tank reached its highest level of 34·7 feet on 18th November, the contents being 186 million cubic feet. On 31st March, the level in the tank was 29·2 feet, the corresponding contents being 115 million cubic feet.

59. The subjoined table gives the results of irrigation, revenue, etc., during the year as compared with the average of the past three years :—

Name of tank.	Area irrigated.		Water rates assessed.		Gross assessed revenue from all sources.	
	1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Kasurdi	47	80	178	317	940	1,393
Shirsuphal	956	1,177	5,704	5,856	5,864	6,297
Bhadalwadi	668	1,376	4,354	6,399	4,970	6,618

Name of tank.	Working expenses.		Realisations.		Rainfall.	
	1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Kasurdi	892	1,198	876	1,423	19·40	17·97
Shirsuphal	3,489	4,124	5,885	4,613	16·55	20·34
Bhadalwadi	4,230	4,372	6,712	1,786	17·72	24·10

60. The area of two-seasonal bases sanctioned during the year under the Shirsuphal Tank was 600 acres, while that under the Bhadalwadi Tank was 498 acres.

NASIK IRRIGATION DIVISION.

Godavari Canals.

61. This is one of the most important major irrigation works undertaken in the Deccan for the protection of areas liable to famine. It was started in 1907 and completed in 1915–16 at a cost of about one crore of rupees. The system comprises (1) a storage reservoir (Lake Beale) on the Darna river, a tributary of the Godavari situated about 20 miles from Nasik, (2) a pick-up-weir at Nandur Madhmeshwar on the Godavari, 47 miles below the Darna Dam, which impounds the water let down from the dam and distributes it to the canals and (3) two canals, the Right Bank Canal, 69 miles long, which serves the northern tracts of the Ahmednagar District, and the left Bank Canal, 48 miles long, which irrigates lands north of the Godavari Valley in the Nasik and Ahmednagar Districts. The Darna Dam (inclusive of its waste weir) is over a mile long and has a maximum height of 92 feet above its lowest foundation level. The lake has a storage capacity of 7,763 million cubic feet, and the cost of the dam was Rs. 34·27 lakhs. The weir at Nandur Madhmeshwar is a work of considerable magnitude, its length being 3,618 feet inclusive of the Right and Left Bank Canal regulators. It has a maximum height of 34 feet above the level of the river bed. Scouring sluices have been constructed close to the head regulators of the two canals with the object of keeping the approach channels clear of silt. The total area under the command of the canals is 232,390 acres, of which some 80,000 acres are irrigable annually. The two canals (Right and Left Bank) are designed to discharge 384 and 228 cusecs at their heads, with full supply depths of 7 feet and 6 feet, respectively, while the respective discharges at the tails of the canals are 114·41 cusecs and 35 cusecs with corresponding full supply depths of 5 feet and 3 feet. Irrigation on the canals developed very rapidly and it is considered likely that an additional storage of 7,000 million

cubic feet will be required for the full development of this area. A scheme for a supplementary storage reservoir at Gangapur, on the Godavari river, near Nasik, is accordingly under consideration.

62. On 1st April, the level of water in Lake Beale was 67·4 feet above the sill of the sluices, the corresponding contents being 5,413 million cubic feet. The lowest level was reached on 4th July, when it was 49·9 feet above the sill of the lowest outlet, the contents then being 2,110 million cubic feet. Replenishment commenced when the water was at this level and the lake filled and overflowed on 14th July. The draw-off for irrigation commenced on 5th January and the level of the water gradually fell to 67·3 feet on 31st March, the contents then being 5,400 million cubic feet. The run-off from the catchment (156 square miles), half of which is a typical Ghat catchment yielding a very reliable supply, was 33,709 million cubic feet. The average rainfall in the catchment area was 60·14 inches, while that in the canal tract was 23·69 inches on the Right Bank Canal and 26·03 inches on the Left Bank Canal.

63. The following table gives the results of irrigation, revenue, etc., during the year as compared with the average of the past three years :—

Name of work.	Area irrigated.		Water rates assessed.		Gross assessed revenue from all sources.	
	1932–33.	Average.	1932–33.	Average.	1932–33.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Lake Beale	386	482	1,459	1,776	2,93,079	3,81,520
Godavari Right Bank Canal	9,052	12,453	1,49,159	1,98,821		
Godavari Left Bank Canal.	7,209	8,884	1,20,107	1,49,225		

Name of work.	Working expenses.		Realisations.		Rainfall.	
	1932–33.	Average.	1932–33.	Average.	1932–33.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Lake Beale	3,45,299	2,71,218	3,57,601	3,56,414	..	..
Godavari Right Bank Canal					23·69	22·80
Godavari Left Bank Canal .					26·03	26·03

64. The area of perennial blocks and two-seasonal leases sanctioned under the canals during the year was 10,169 acres and 490 acres respectively. The perennial limit of the Godavari Right Bank Canal extends up to mile 60 while that of the Left Bank Canal extends up to mile 42. The cost of the measuring establishment amounted to Rs. 262, which gives a rate of 7 pies per acre on the actually measured area of 7,327 acres, against a rate of 5 pies per acre during the previous year. The remissions sanctioned during the year amounted to Rs. 434 and refunds to Rs. 50. The expenditure on maintenance and repairs amounted to Rs. 69,429.

Chankapur Tank—Girna Left Bank Canal.

65. This is a comparatively small irrigation system situated in the Nasik Collectorate, and consisting of a storage reservoir at Chankapur together with the Girna Left Bank Canal which is about 19 miles long. The tank is situated on the Girna river, a tributary of the Tapti, and has been formed by the construction of a masonry dam 140 feet high, which impounds 1,500 million cubic feet of water. The dam was completed in 1909–10. The total area under the command of the canal is 29,182 acres of which 8,500 acres will be irrigated annually when full development is reached. The designed discharge of the canal at its head is 90 cusecs and at its tail 15 cusecs, the full supply depths being 4½ feet and 2 feet respectively. The canal has been in operation since 1909–10, and an extension of the system which was completed in 1920–21 has been designed to carry about 40 cusecs.

66. On 1st April, the level of water in the tank was 82·2 feet, the corresponding contents being 1,040 million cubic feet. The level dropped to 40·5 feet on 4th July, the contents then being 170 million cubic feet, when replenishment commenced. The level gradually rose to 90·9 feet on 7th August, the contents then being 1,475 million cubic feet. The draw-off for irrigation purposes commenced on 10th January. The level of water on 31st March was 66·2 feet, the corresponding contents being 755 million cubic feet. The run-off from the catchment of the tank (100 square miles) was 9,441 million cubic feet, the average rainfall being 47·26 inches. The maximum flood occurred on 29th August. The rainfall in the canal tract was 22·74 inches, while the rainfall received both in the catchment of the tank and in the canal tract was satisfactory.

67. The following table shows the results of irrigation, revenue, etc., during the year as compared with the average of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue from all sources.	
1932–33.	Average.	1932–33.	Average.	1932–33.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
5,665	4,537	43,086	38,114	43,616	68,546

Working expenses.		Realisations.		Rainfall.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
49,876	66,942	53,624	26,959	22·74	22·65

68. The remissions sanctioned during the year amounted to Rs. 85. The maintenance and repairs were carried out at a cost of Rs. 15,000, and the cost of the measuring establishment amounted to Rs. 532, which gives a rate of 1 anna 6 pies per acre against 1 anna 5 pies per acre during the previous year.

Kadwa River Works.

69. These works, which came into operation in 1868–69, consist of three small canals, viz., the Palkhed, Ojhar Tambat and Wadali, taking off from weirs constructed across the Kadwa river and its tributary the Banganga, and the system comprises 38 miles of canals and distributaries. The storage is at Waghad, and this Tank which is a Ghat-fed storage is situated on the Kolwan river in the Nasik District. The tank is remarkable for the size of its earthen dam which has a maximum height of 96 feet. The designed discharges of the Palkhed Canal at head and at tail are 90 cusecs and 15 cusecs respectively, the corresponding depths at full supply being 4½ feet and 2 feet. The designed discharges of the Ojhar Tambat Canal at head and at tail are 33 cusecs and 5 cusecs, respectively, the depths at full supply being 3 feet and 1 foot respectively. The designed discharges of the Wadali canal at head and at tail are 19 cusecs and 5 cusecs respectively, the depths at full supply being 2 feet and 1 foot respectively.

70. On 1st April, the level of the water in the Waghad Tank was 41·00 feet above the sill of the outlet, the contents being 405 million cubic feet. The level fell to 25·4 feet on 5th July, the corresponding contents being 137 million cubic feet. The tank was replenished on 13th July and the waste weir overflowed on 16th July. The draw-off for irrigation purposes commenced on 10th October with a depth of water of 46·6 feet representing a volume of 559 million cubic feet. The level gradually dropped to 36·15 feet above the sill of the outlet on 31st March, the contents then being 302 million cubic feet. The run-off from the catchment of the tank (29 square miles) was 2,261 million cubic feet. The average rainfall in the catchment was 64 inches, and that in the canal tract was 30·36 inches. The maximum flood occurred on 7th September. The rainfall received both in the catchment of the tank and in the canal tract was satisfactory.

71. The following table shows the results of irrigation, revenue, etc., during the year as compared with the average of the past three years :—

Name of Canal.	Area irrigated.		Water rates assessed.		Gross assessed revenue from all sources.	
	1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Palkhed canal ..	2,088	1,479	16,706	17,214	37,668	41,445
Ojhar Tambat canal ..	1,082	876	9,579	11,356		
Wadali canal ..	1,014	787	9,184	9,407		

Name of Canal.	Working expenses.		Realisations.		Rainfall.	
	1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Palkhed canal ..	34,982	31,159	43,079	35,121	30·16	29·55
Ojhar Tambat canal ..					31·35	34·46
Wadali canal ..					29·56	24·14

72. The cost of the measuring establishment amounted to Rs. 153 which gives a rate of 7 pies per acre as compared with 8 pies per acre the previous year. Perennial irrigation is permitted throughout the areas served by the canals but owing to the limited supply available, the hot weather irrigation has to depend partially upon wells. The area cultivated under sugarcane and two-seasonal leases during the year were 521 acres and 1,843 acres respectively. The expenditure incurred on maintenance and repairs amounted to Rs. 6,608.

Parsul Tank.

73. This small tank depends solely on local rains for its supply and generally stores sufficient water for monsoon and rabi crops only.

On 1st April, the level of water in the tank was 24·4 feet above the sill of the outlet, the contents being 62 million cubic feet. The level fell to 13·8 feet on 3rd July. The replenishment was received subsequently and the level gradually rose to 35 feet on 23rd August, when the waste weir overflowed. The level was 19·83 feet on 31st March and the corresponding contents were 43 million cubic feet. The tank was maintained and repaired during the year at a cost of Rs. 607.

74. The following table shows the results of irrigation, revenue, etc., during the year as compared with the average of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue from all sources.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
814	710	4,038	3,526	4,403	6,476

Working expenses.		Realisations.		Rainfall.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
1,829	4,505	3,525	4,150	19·20	19·66

75. The cost of the measuring establishment works out to 1 anna 3 pies per acre against 1 anna and 7 pies per acre during the previous year. The refunds sanctioned during the year amounted to Rs. 777 and the remissions to Rs. 2,440.

AHMEDNAGAR DIVISION.

Pravara River Works.

76. This canal system, which was constructed at a cost of Rs. 1½ crores, comprises (1) the Wilson Dam at Bandhardara on the Pravara river, which is one of the highest dams in the world, (2) the pick-up weir on the river at Ojhar, 53 miles below the dam, and (3) two canals, 33 miles and 48 miles long, respectively, which take off from the river at the weir. The canals irrigate lands in the Ahmednagar District and they command an area of 228,720 acres of which 52,000 acres will be irrigated annually when full development is reached. The designed discharges of the two canals, which are known as the Pravara Right Bank Canal and the Pravara Left Bank Canal, at head are 152·62 cusecs and 530 cusecs respectively, the corresponding full supply depths being 5 feet and 8 feet, while the designed discharges at tail are 81·79 cusecs and 102 cusecs, respectively, with a full supply depth of 3 feet in each case. The first few miles of both canals have silted heavily and are infested with weeds, the cause in each case being the insufficient bed slope, and consequently proposals for the remodelling of these sections are under consideration. The construction of the Wilson Dam, which forms Lake Arthur Hill, was commenced in 1911 and completed in 1926. The catchment area of the lake is 47 square miles : it is situated in the Ghats and has an assured run-off. The dam, which is designed to impound a maximum depth of water of 270 feet, is about 1,600 feet long at the top and is constructed across a gorge in the valley of the Pravara River. At present water is impounded to a depth of 260 feet giving a storage of

10,086 million cubic feet, and this can be increased to 12,092 million cubic feet, with a corresponding depth of 270 feet, by the erection of automatic gates on the waste weir. The pick-up weir at Ojhar is 890 feet in length. Silt has accumulated in the weir basin to such an extent that a full day's supply for the canals cannot now be stored, and the undertaking of the necessary remedial measures is under consideration.

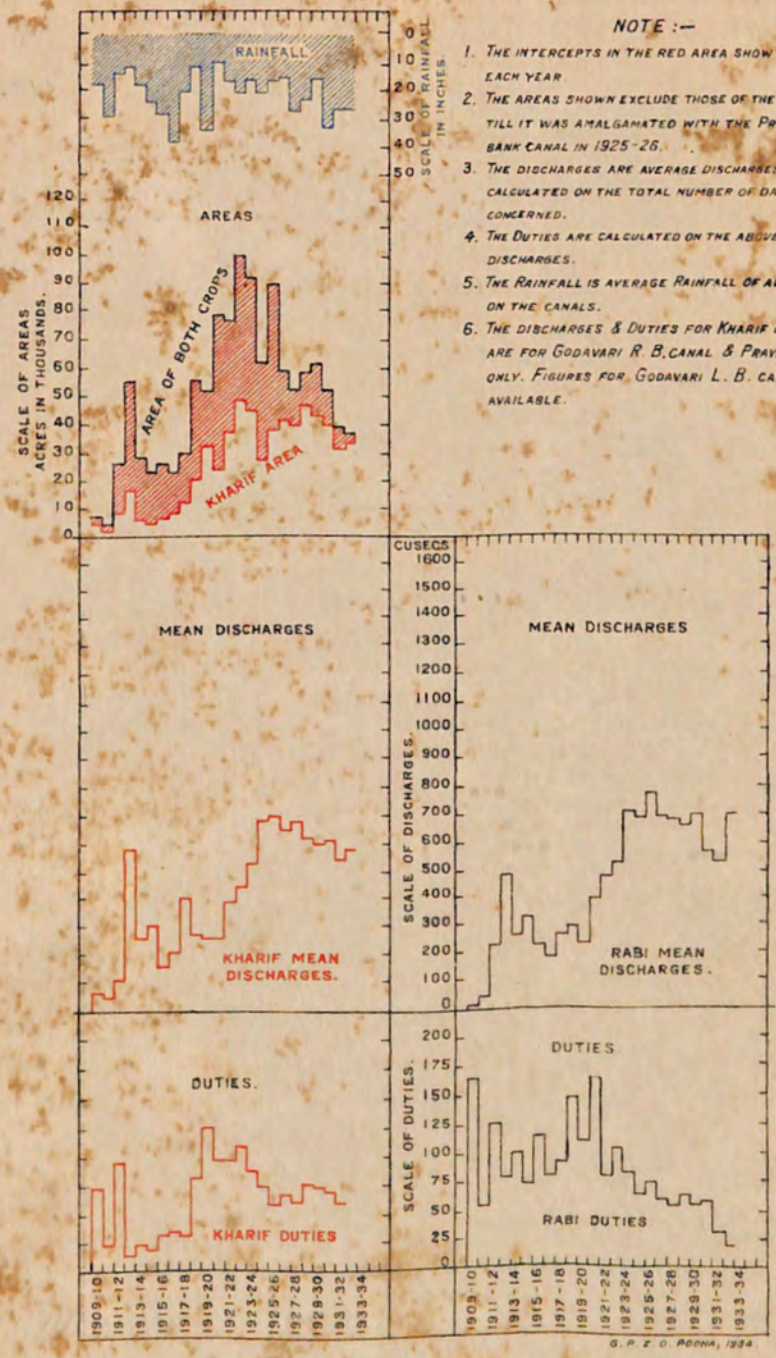
77. On 1st April, the level of water in Lake Arthur Hill was 237·35 feet above the sill of the lowest outlet, the corresponding contents being 6,664 million cubic feet. The lowest level of 202·5 feet was reached on 5th July, the contents then being 3,350 million cubic feet. Replenishment commenced from 6th July and the full supply level of 260 feet was reached on 25th July. The maximum flood occurred on 27th July when the level was 263·5 feet above the sill of the outlet. The full supply level was maintained till 5th November. The draw-off for irrigation from the storage commenced from 6th November. The level of the water in the lake gradually fell to 223·2 feet on 31st March, the contents then being 5,074 million cubic feet. The yield from the catchment of the lake (47 square miles) was 33,163 million cubic feet while the average of the several rain-gauge readings was 150·63 inches. The rainfall in the canal tracts was 29·01 inches on the Pravara Right Bank Canal and 24·58 inches on the Pravara Left Bank Canal. The rainfall both in the catchment and in the canal tracts was timely and well distributed. Owing to the late rains which were received in August and September there was a reduced demand for canal water for rabi irrigation.

78. The following table shows the results of irrigation, revenue, etc., during the year as compared with the average of the past three years :—

Name of work.	Area irrigated.		Water rates assessed.		Gross assessed revenue from all sources.	
	1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Pravara Right Bank Canal.	4,750	8,371	68,098	1,01,521	3,78,226	4,67,606
Pravara Left Bank Canal.	15,657	21,429	2,97,393	3,42,758		

Name of work.	Working expenses.		Realisations.		Rainfall.	
	1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Pravara Right Bank Canal.	2,43,531	2,66,620	4,88,372	4,34,969	29·01	22·27
Pravara Left Bank Canal.					24·58	21·76

AHMEDNAGAR DIVISION
GODAVARI & PRAVARA CANALS
COMBINED WORKING RECORD.
FOR THE YEAR 1932 - 33.



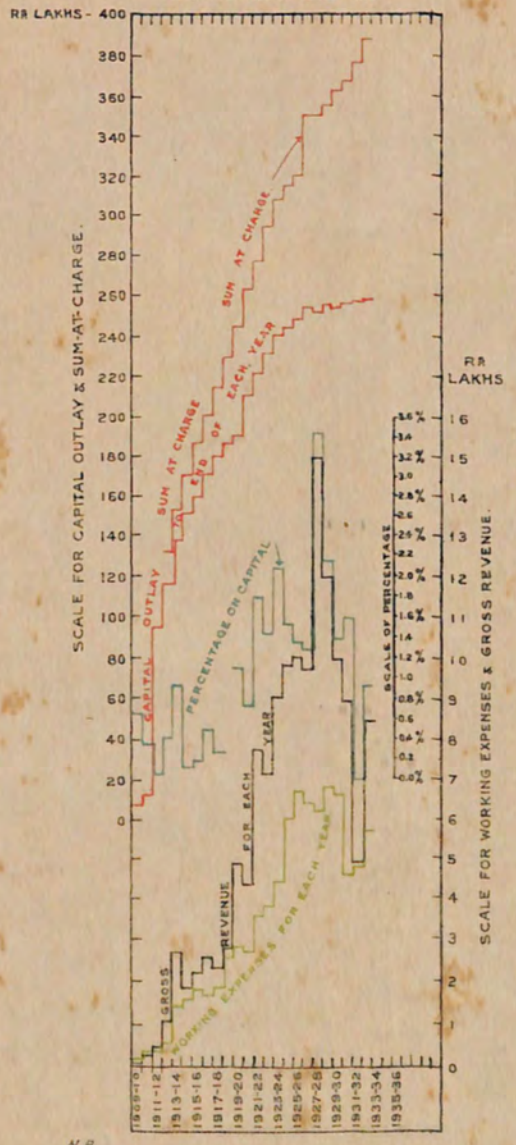
NOTE :—

1. The intercepts in the red area show the Rabi acres each year
2. The areas shown exclude those of the Lakh channel till it was amalgamated with the Pravara left bank canal in 1925-26.
3. The discharges are average discharges at head calculated on the total number of days of the season concerned.
4. The Duties are calculated on the above areas and discharges.
5. The Rainfall is average Rainfall of all the stations on the canals.
6. The discharges & Duties for Kharif & Rabi 1912-13 are for Godavari R. B. canal & Pravara canals only. Figures for Godavari L. B. canal are not available.

G. P. E. O. Poona, 1934.

Sd/ C. E. AITKEN
11-11-33
Executive Engineer,
Ahmednagar Division.

AHMEDNAGAR DIVISION
GODAVARI & PRAVARA CANALS
COMBINED FINANCIAL RECORD.
FOR THE YEAR 1932-33



N.B.

THE DIFFERENCE BETWEEN THE TWO RED LINES SHOWS ARREARS OF INTEREST UNPAID UPTO END OF EACH YEAR, WHICH BEING ADDED TO THE CAPITAL GIVES SUM-AT-CHARGE.

THE DIFFERENCE BETWEEN THE GREEN & BLACK LINES SHOWS THE NET INCOME EACH YEAR.

NAME OF CANAL	CONSTRUCTION COMMENCED IN.	CANAL WAS OPENED IN.
GODAVARI CANALS.	1907	1911-12
PRAVARA CANALS.	1909	1909-10

Sd/ C.E. AITKEN
11-11-33
EXECUTIVE ENGINEER.
AHMEDNAGAR DIVISION.

79. The refunds and remissions sanctioned during the year amounted to Rs. 618 and Rs. 49 respectively. The total area of perennial blocks sanctioned during the year was 10,081 acres, while the area under two-seasonal leases was 846 acres. The area of perennial blocks cancelled was 1,215 acres. The cost of the measuring establishment amounted to Rs. 334, which gives a rate of 6 pies per acre against 8 pies per acre for the previous year. The expenditure incurred during the year on maintenance and repairs to the Wilson Dam and the Canals amounted to Rs. 55,344, and that on maintaining the telegraph and telephone lines to Rs. 10,783.

Bhatodi Tank.

80. This is a small tank situated on the Mehekari river about 12 miles from Ahmednagar. It depends entirely on local rains for its supply and this supply generally suffices for the crops irrigated during the monsoon and part of the rabi season. The tank has silted heavily and its storage capacity has consequently been reduced from 154 to 39 million cubic feet, and in order to increase the capacity it is proposed to raise the level of the waste weir by one foot. In the meantime an earthen bund has been constructed on the waste weir as a temporary measure. On 1st April, the level of water in the tank was 20·35 feet, the contents being 23 million cubic feet. The first replenishment was received on 20th June and this raised the level of the water to 20·22 feet. The highest level reached was 20·2 feet on 21st August and the waste weir overflowed to a depth of 2·5 feet. The level on 31st March was 25 feet, the contents then being 6 million cubic feet. The expenditure incurred on maintenance and repairs during the year amounted to Rs. 1,521.

81. The following table shows the results of irrigation, revenue, etc., during the year as compared with the average of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue from all sources.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
632	681	2,958	2,946	6,631	6,879

Working expenses.		Realisations.		Rainfall.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
4,723	6,339	7106	7,024	24 95	30 5

CENTRAL CIRCLE.

POONA DIVISION.

82. The area irrigated, gross assessed revenue, and working expenses of the two works mentioned below, as compared with the average of the preceding three years, are given in the following statement :—

Name of work.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Krishna Canal ..	5,147	5,326	87,016	76,151	23,995	19,728
Rewari Canal ..	705	904	4,004	4,816	3,545	3,466

KRISHNA CANAL.

83. The total rainfall gauged at Retre Budruk, which is in the centre of the canal tract, was 44·70 inches compared with the average of 28·09 inches for the past three years. The rainfall was sufficient in both seasons and was well distributed over the catchment area.

REWARI CANAL.

84. The rainfall gauged at Rewari, which is one mile below the bandhara, was 43·05 inches against 30·94 inches, the average of the preceding three years. In both seasons the rainfall was good, timely, and well distributed.

SHOLAPUR DIVISION.

85. The area irrigated, gross assessed revenue, and working expenses, of the tanks and canals now in charge of the Sholapur Division, as compared with the average of the preceding three years, are given in the following statement :—

Name of work.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1932-33	Average.	1932-33.	Average.	1932-33.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Ekruk Tank ..	3,386	4,318	1,31,325	1,52,288	19,571	20,278
Koregaon Tank ..	551	547	2,387	2,033	2,201	2,681
Ashti Tank ..	3,178	3,983	17,315	21,587	16,275	11,080
Pathri Tank ..	987	1,041	10,930	11,564	4,540	5,527
Upper Man River Works.	774	1,317	4,081	4,731	8,911	8,332
Yerla River Irrigation Works ..	2,681	4,464	17,520	19,103	19,224	17,551
Chikhli Canal ..	253	374	2,321	1,919	1,598	2,177
Miami Tank ..	1,473	2,149	6,504	7,878	5,342	6,057

Ekruk Tank.

86. The Ekruk Tank, situated near Sholapur, which came into operation in the year 1872–1873, is an artificial reservoir formed by a large earthen embankment 7,000 feet long having a maximum height of 76 feet. It supplies water not only for irrigation purposes but also for non-irrigational purposes to the town of Sholapur, the mills in Sholapur, and the G. I. P. Railway. Under unfavourable conditions of replenishment, which occur periodically, the supply available from the tank is not sufficient to meet all the demands which arise, and the question of providing a supplementary storage is under consideration.

87. On 1st April, the level of the water in the tank was 30·31 feet above the sill of the outlet ; the storage available on 31st May was found sufficient to admit of the cultivation of 500 acres of monsoon crops. The highest level of only 30·85 feet was reached on 29th November, and the replenishment received was less than that of last year when the corresponding level of water was 33·68 feet. The mean rainfall gauged at the five stations in the catchment area of the tank was 23·96 inches, against 18·92 inches, the average of the preceding three years, and the total replenishment received amounted to 682·48 million cubic feet.

Koregaon Tank.

88. On 1st April, the level of the water in the tank was 5·87 feet above the sill of the outlet. This level gradually fell to 3·50 feet on 13th July, but due to rainfall received on 14th July and onwards the level began to rise and reached 12·65 feet on 29th October. The storage was fully utilised in meeting the demands of the lease-holders.

The rainfall recorded at Koregaon was 28·60 inches against 21·24 inches, the average of the preceding three years.

Ashti Tank.

89. On 1st April, the level of the water in the tank was 17·48 feet over the sill of the outlet, and this gradually fell to 15·57 feet on 19th June. A replenishment of 196·58 million cubic feet was received during the period June, July, and August and water began to flow over the waste weir from 24th August, on which date the level rose to 22·55 feet. Owing to the timely rainfall received there was no further demand for water during the rabi season. The demands of the lease-holders were fully met. The mean rainfall gauged at the two stations in the catchment was 36·65 inches compared with 23·20 inches, the average of the preceding three years.

Pathri Tank.

90. On 1st April, the level of the water in the tank was 28·80 feet above the sill of the outlet, and this level gradually fell to 26·58 feet. A replenishment of 9·619 million cubic feet was received in June with a consequent rise in the level, and with the further replenishment received during July, the level rose to 32·80 feet on 28th July, the water flowing

over the waste weir from 1st August. The storage was utilised in meeting the demands of the lease holders and of the Barsi Municipality.

The mean rainfall gauged at two stations in the catchment area was 25·88 inches against 27·23 inches, the average of the preceding three years.

Upper Man River Works.

(*Pingli Tank.*)

91. On 1st April, the tank level was at R. L. 2365·79 the corresponding contents being 85·18 million cubic feet. The first replenishment was received on 28th May, when the water level rose to R. L. 2363·29. The second replenishment was received on 6th July, when the water level rose to R. L. 2362·69. During the year under report the highest water level reached was R. L. 2371·89 at which level the water began to flow over the waste weir. The rainfall gauged at Gondavala, which is 3 miles below the tank, was 25·50 inches compared with 20·98 inches, the average of the preceding three years.

Yerla River Irrigation Works.

(*Nehr Tank.*)

92. On 1st April, the R. L. of the water in the tank was 2660·32 equivalent to a storage of 260·56 million cubic feet. The supply was utilised for hot weather crops till 15th May, when the R. L. of the water was 2658·64. The first replenishment was received on 16th May, when the R. L. rose to 2659·02. The level began to fall until the second replenishment was received on 20th June, when the water was at R. L. 2658·56. On 21st August the highest level of R. L. 2666·50, equivalent to 406·80 million cubic feet of water was reached, and at this level the water began to flow over the waste weir. The rainfall gauged at Khatgun, which is about 4 miles below the tank, was 46·91 inches compared with 33·94 inches, the average of the previous three years.

Maini Tank.

93. On 1st April, the water level in the tank was at R. L. 2297·57. The first replenishment was received on 30th April, when the R. L. was 2298·57, and the second replenishment was received on 20th May. The highest level of R. L. 2304·82 was reached on 6th October. The rainfall gauged at Maini was 25·87 inches against 24·65 inches, the average of the preceding three years.

Chikhli Canal.

94. On 1st April, the level of the water in the river was 1·5 feet. The first flood was received on 23rd April, there being a second flood on 29th April, while the highest flood received during the year occurred on 19th October. The rainfall gauged at Chikhli was 34·90 inches compared with 18·27 inches, the average of the preceding three years.

KHANDESH DIVISION.

JAMDA CANALS.

95. These canals receive their supply from the Girna River and this is supplemented from time to time by water obtained from the Chankapur Tank in the Nasik Irrigation Division. The rainfall received during the year was unseasonable and consequently the demand for canal water was considerable. The rainfall in the catchment of the canals was 20·2 inches compared with 31·43 inches, the average of the preceding three years. The sub-joined table shows the area irrigated, gross assessed revenue, and working expenses, as compared with the average of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
2,983	1,766	12,034	11,825	12,732	12,932

HARTALA TANK.

96. The tank derives its supply from local rains and this supply is uncertain. On 1st April, the storage of the tank was 89·53 million cubic feet and this gradually diminished to 57·01 million cubic feet. On 4th July the first replenishment was received and the contents increased to 58·60 million cubic feet. The maximum storage of 93·65 million cubic feet was reached on 17th September, while on 31st March the storage was 44·10 million cubic feet. The rainfall gauged at the tank was 22·98 inches against 29·60 inches, the average of the preceding three years.

97. The sub-joined table shows the area irrigated, gross assessed revenue, and working expenses, as compared with the average of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
114	84	839	768	815	971

MHASWA TANK.

98. The tank derives its supply from local rains. On 1st April, the storage of the tank was 104·32 million cubic feet and this gradually diminished to 66·36 million cubic feet. The first replenishment was

received on 4th July. The maximum storage of 119·58 million cubic feet was reached on 3rd September, while on 31st March the storage was 45·76 million cubic feet.

The rainfall in the tank area was 20·97 inches against 28·09 inches, the average of the preceding three years.

The area irrigated, gross assessed revenue, and working expenses, during the year, as compared with the preceding three years are given below :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
317	443	1,405	2,339	1,792	1,630

Shahada Channel.

99. The channel is fed by the Gomai River which has a perennial flow. The rainfall gauged at Shahada was 25·15 inches against 34·07 inches, the average of the preceding three years.

100. The area irrigated, gross assessed revenue, and working expenses, as compared with the average of the preceding three years are given below :—

Area irrigated.				Gross assessed revenue.		Working expenses.	
Patasthal.		Jirayat.					
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
998	995	303	533	7,848	9,356	4,631	5,694

Lower Panjhra River Works.

101. These works comprise 8 bandharas and 9 channels situated between Dhulia and Betawad on the Panjhra River, and the Mukti Tank which is situated about 4 miles to the south-west of Dhulia.

The channels obtain their supply from the river but when that supply is insufficient, it is supplemented by water obtained from the Mukti Tank.

102. On 1st April, the contents of the tank were 220·75 million cubic feet which gradually diminished to 167·17 million cubic feet. The first replenishment was received on 4th July and this raised the contents to

171·24 million cubic feet. The maximum storage of 285·45 million cubic feet was reached on 29th July. The rainfall in the area of the Lower Panjhra River Works was seasonable and consequently there was a reduced demand for water.

103. The sub-joined table shows the area irrigated, gross assessed revenue, and working expenses, as compared with the average of the preceding three years :—

Area irrigated.				Gross assessed revenue.		Working expenses.	
Patasthal.		Jirayat.					
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,266	1,258	1,223	1,301	26,050	27,227	4,299	8,969

SOUTHERN CIRCLE.

BELGAUM DIVISION.

Gadikeri Tank.

104. The lands under the command of this tank are all assessed at consolidated rates. The area irrigated and the Irrigation share of the Land Revenue assessed were 418 acres and Rs. 2,344 respectively. The working expenses amounted to Rs. 258.

Gokak Canal.

105. This Canal System is the most important Irrigation Scheme in the Southern Circle, and consists of a Reservoir formed by a masonry weir constructed across the Ghataprabha River at Dhupdal, in the Belgaum District, together with 16 miles of Main and Branch Canals and 36 miles of Distributaries. The Canal commands an area of 18,668 acres, the area irrigable being 17,627 acres. Although the Dhupdal Storage is mainly intended for the irrigation of the lands under the Canal, a stipulated quantity of water is issued to the Gokak Mills Company in accordance with the terms of an Agreement reached between Government and the Company, in consideration of which a sum of Rs. 14,313 is annually paid by the Company subject to a rebate in the event of the supply falling short of the quantity contracted for. During the year under report the Mills were supplied with the full stipulated quantity of water, there being an unprecedented replenishment of the supplies in the Reservoir on account of the heavy rainfall received.

106. Water was supplied to the M. & S. M. Railway Company at their Hukeri Road Station at a charge of Rs. 50 per month. The total amount recovered from the Railway Company during the year was Rs. 600.

107. On 1st April, the level of water in the Reservoir was 22·22 feet. The level rose to 22·40 feet on 22nd May but fell to 20·95 feet on 30th June due to the cessation of replenishment. From 1st July the Canal again received replenishment and this continued until the reservoir overflowed on 9th July, and the overflow only ceased on the 14th August. In order to store water received from the post-monsoon floods, a temporary wooden crest was raised.

108. The following table gives information regarding the area irrigated, revenue assessed, etc., as compared with the average of the previous three years :—

		1932-33.	Average.
Area irrigated	..	6,899 acres.	8,760 acres.
Gross assessed revenue	..	Rs. 62,193	Rs. 81,082
Working expenses	..	Rs. 16,262	Rs. 30,369

DHARWAR DIVISION.

MUCHKUNDI TANK.

109. This tank is solely dependent on local rains for its supplies and the storage of water in the Tank is uncertain owing to the scanty rainfall in the area and smallness of the catchment. The rainfall during the year was favourable and was sufficient for irrigating the lands dependent on the tank. On 1st April, the water level in the tank was at R. L. 1785·13 or 11·69 feet above the sill of the outlet while the highest level of R.L. 1797·58 was reached on 18th November. On 31st March the level fell to R. L. 1794·85 or 11·41 feet above the sill of the outlet. The gross assessed revenue was Rs. 776 while the working expenses amounted to Rs. 1,885 the resulting deficit being Rs. 1,109.

DAMBAL TANK.

110. The tank was dry at the beginning of the year under report. It received its first replenishment on 18th August. The highest water level of R.L. 142·30 or 5·20 feet above the silted tank bed level, was reached on 9th November. The level fell gradually until 13th March on which date the tank was empty, and no further replenishment was received. Part of the land under this tank is assessed at water rates, the balance being assessed at consolidated rates. The total area irrigated and the assessment levied under the former head (water rates) were, respectively, 7 acres and Rs. 42, compared with 66 acres and Rs. 241 during the previous year, and 152 acres and Rs. 708, the average of the past 3 years. The heavy decrease both in the area irrigated and the revenue assessed was due to the scanty supply of water available in the tank. The irrigated area under consolidated assessment and the irrigation share of the land revenue assessed were 143 acres and Rs. 916 respectively. The total assessed revenue was Rs. 2,282 while the working expenses amounted to Rs. 667.

Medleri Tank.

111. There was no water in the tank at the beginning of the year under report. The tank received its first replenishment on 3rd May and the water in the tank reached its highest level of 180·20, or 0·20 feet above the crest of the waste weir, on 20th May. There was an adequate supply of water in the tank during the year. The area irrigated and the assessment levied thereon were 32 acres and Rs. 422, respectively, against 43 acres and Rs. 518, the corresponding averages of the past three years. The gross assessed revenue was Rs. 568 and the working expenses amounted to Rs. 927.

Madag Tank.

112. On 1st April, the water level in the Tank was at R.L. 1874·91 or 1·65 feet above the sill of outlet. The tank received its first replenishment on 21st May, and overflowed from 21st May to 29th December. The highest water level reached during the year was R.L. 1887·46, or 9·75 feet above the crest of the waste weir, and the supply in the tank throughout the year was sufficient for irrigation purposes. The level of the water on 31st March was · R.L. ·1876·54, or 3·28 feet above the sill of the outlet. The area irrigated and the assessment thereon were 573 acres and Rs. 2,443, respectively, compared with 457 acres and Rs. 2,152, the corresponding averages of the past three years. The increase both in the area irrigated and in the revenue assessed was due to an increased demand for water from the tank during the year. The gross assessed revenue was Rs. 2,874 against Rs. 2,497, the average of the previous three years, while the working expenses amounted to Rs. 1,772 against Rs. 1,911, the average of the past three years.

Asundi Tank.

113. On 1st April, the level of the water in the tank was at R. L. 103·56, or 4·56 feet above the sill of the outlet. The tank received its first replenishment on 20th May and the highest level reached was R.L. 109·00, or 2 feet above the crest of the waste weir. The supply of water in the tank was sufficient for irrigation purposes, and the level of the water on 31st March was at R.L. 103·28, or 4·28 feet above the sill of the outlet. The lands under this tank are assessed partly at water rates and partly at consolidated rates. The area irrigated and the assessment thereon were 120 acres and Rs. 856 respectively compared with 49 acres and Rs. 380, the corresponding averages of the past three years. The increase both in the area irrigated and in the resulting revenue was due to an increased demand for water from the tank. The area under consolidated assessment was 190 acres and the irrigation share of the land revenue assessed was Rs. 686. The gross assessed revenue amounted to Rs. 1,693 against Rs. 1,401, the average of the previous three years.

Dharma Canal.

114. This Canal is fed by the Dharma River, and a number of tanks in turn are fed by the Canal. The Canal began to flow on 26th June. Due to the heavy rainfall received during the year there were breaches in the Canal bund and these were promptly repaired. The late rains received in this area assisted in the replenishment of all the 2nd class tanks dependent on the Canal. The lands commanded by this Canal are assessed partly at water rates and partly at consolidated rates. The irrigated area and the water rate assessed thereon were 405 acres and Rs. 2,225, respectively. The area under consolidated assessment was 5,227 acres, the irrigation share of the land revenue assessed thereon being Rs. 24,212. The gross assessed revenue (after deducting Rs. 23,156 credited to old work) amounted to Rs. 3,281, while the working expenses amounted to Rs. 1,866 compared with Rs. 1,698, the average of the previous three years.

KANARA DIVISION.

Mavinkop Tank.

115. The management of this tank has been entrusted to the Revenue Department. The rainfall was 64·63 inches and the supply in the tank was sufficient to meet the demands for water therefrom. The area irrigated under this tank, which is assessed at consolidated rates, amounted during the year to 634 acres, and the irrigation share of the land revenue amounted to Rs. 2,045, compared with 403 acres and Rs. 2,045, respectively, for the previous year. The working expenses amounted to Rs. 352 as against Rs. 292 during the previous year. The gross assessed revenue was Rs. 2,045.

SECTION II.

COMPRISING IRRIGATION WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

116. The area of irrigation under, and revenue due from works (for which neither capital nor revenue accounts are kept) in the Deccan and Gujarat, as recorded in the register of these works, were 284,466 acres and Rs. 9,28,051 respectively. The following tables give details (by Districts) of the area irrigated, expenditure, revenue, etc., in respect of irrigation works on which expenditure was incurred during the year :—

TABLE I.

Showing the area irrigated in the different districts in the Deccan and Gujarat and the consolidated land revenue and water rates assessed and recovered during the year 1932-33 in respect of irrigation works (for which neither Capital nor Revenue Accounts are kept) on which expenditure was incurred during the year.

Collectorate.	Number of works.	Area irrigated.	Revenue.			Remarks.
			Irrigation share.	Land share.	Total.	
		Acres.	Rs.	Rs.	Rs.	
Ahmedabad ..	33	219	(A) 671	526	1,197	(A) Includes Rs. 585 on account of "Direct receipts-Water rates."
Kaira ..	26	7,874	(B) 30,445	20,437	50,882	(B) Includes Rs.20,224 on account of "Direct receipts-Water rates."
Panch Mahals ..	13	1,816	(C) 4,053	1,436	5,489	(C) Includes Rs. 3,364 on account of "Direct receipts-Water rates."
Surat ..	39	1,437	3,285	14,352	17,637	
Broach ..	4	122	231	830	1,061	
East Khandesh ..	..	..	..	..	..	
West Khandesh..	5	1,290	(D) 9,484	1,671	1,155	(D) Includes Rs.1,496 on account of "Direct receipts-Water rates."
Nasik ..	58	6,677	(E) 64,629	14,734	79,363	(E) Includes Rs. 6,287 on account of "Direct receipts-Water rates."
Poona ..	1	70	(F) 444	..	444	(F) Water rates direct receipts.
Sholapur ..	3	320	(G) 2,307	..	2,307	(G) Water rates direct receipts.
Belgaum ..	25	2,165	10,465	2,616	13,081	
Dharwar ..	59	8,035	32,476	8,119	40,595	
Kanara ..	32	2,676	7,636	1,927	9,563	
Bijapur ..	2	123	770	144	914	
Ratnagiri ..	1	211	827	..	827	
Ahmednagar ..	2	2,089	(H) 11,804	..	11,804	(H) Water rates direct receipts.
Total ..	303	35,124	1,79,527	66,792	2,46,319	

TABLE

Showing actual expenditure and receipts for the year 1932-33 on the revenue accounts are kept) on which

Collectorate.	Expenditure.						
	Direct Charges.						
	Extensions and improvements.	Maintenance and repairs.	Establishment.	Tools and plant.	Total.	Share of collection charges.	Grand Total.
1	2	3	4	5	6	7	8
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Ahmedabad ..	4,823	15,289				67	
Kaira	679	18,913	17,265	620	65,889	3,247	69,442
Panch Mahals ..	..	8,300				239	
Surat	..	18,957				856	
			8,258	296	31,518		32,397
Broach	..	4,007				23	
East Khandesh ..	..	....	..	..	..	..	..
West Khandesh ..	..	1,457	1,812	29	3,298	829	4,127
Nasik	1,951	37,303	52,762	507	92,523	5,960	98,483
	Works 2,616						
Poona	329	7,427	41,409	539	52,320	9	52,329
Sholapur ..	..	1,949	2,469	38	4,456	56	4,512
Belgaum	458	10,521	4,645	216	15,840	1,047	16,887
Bijapur	..	1,215				77	
Dharwar ..	3,974	28,943	14,356	645	49,133	3,256	52,466
Kanara	3,250	11,821	6,374	297	21,742	764	22,506
Ratnagiri ..	..	554	234	11	799	83	882
	Works 2,074						
Ahmednagar ..	398	8,754	21,823	145	33,194	236	33,430
	Works 4,690; Extensions and improvements 15,862						
Total ..		1,75,410	1,71,407	3,343	3,70,712	16,749	3,87,461

II.

Irrigation Works in the Deccan and Gujarat (for which neither capital nor expenditure was incurred during the year.

Actual Receipts.

Direct Receipts.			Indirect receipts share of consolidated revenue.	Grand total, direct and indirect receipts.	Less refunds of revenue.	Gross receipts less refunds.
Water rates from irrigation.	Miscellaneous.	Total direct receipts.				
9	10	11	12	13	14	15
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
585	1,365	1,950	86	2,036	....	2,036
20,224	6,438	26,662	10,221	36,883	....	36,883
3,364	2,050	5,414	689	6,103	....	6,103
....	5,296	5,296	3,285	8,581	117	8,464
....	..	....	231	231	....	231
....	..	....	....	....	....	....
1,496	40	1,536	7,988	9,524	....	9,524
6,287	1,041	7,328	58,342	65,670	....	65,670
444	129	573	....	573	....	573
2,307	920	3,227	....	3,227	....	3,227
....	3	3	10,465	10,468	....	10,468
....	..	....	770	770	....	770
....	93	93	32,476	32,569	....	32,569
....	..	....	7,636	7,636	....	7,636
....	..	....	827	827	....	827
11,804	4,997	16,801	....	16,801	....	16,801
46,511	22,372	68,883	1,33,016	2,01,899	117	2,01,782

DETAILED REPORTS BY LOCAL OFFICERS.

NORTHERN CIRCLE.

AHMEDABAD, KAIRA AND PANCH MAHALS AND SURAT AND BROACH DIVISIONS.

KHARI SLUICES.

117. There were two floods during June and three during July on the Khari River at Pinglaj, the head of the Khari sluices system. The Bherai and the Naika reservoirs, and other second class tanks under the system, were filled as a result of these floods which were of short duration only. No difficulty was experienced in respect of the work of transplantation in the Kalambandhi area. The supply in the river, however, failed to some extent by the end of September when it became necessary to resort to Kalambandhi rotations.

118. Out of the himayat paying area of 7,240 acres in the Kalambandhi villages, 6,410 acres were cropped with rice. A non-himayat paying area of about 543 acres was also irrigated and brought to maturity. The Khari sluices, including the Goblaj Tank and the Bherai and the Naika Reservoirs, were maintained in good order at a cost of Rs. 6,346. The miscellaneous revenue under the Khari sluices system amounted to Rs. 422 compared with Rs. 389 received during the previous year.

119. The following table compares the areas irrigated and the assessments levied during the year with the averages of the previous three years :—

	Average.		1932-33.	
	Area.	* Revenue after deducting remissions.	Area.	* Revenue after deducting remissions.
	Acres	Rs.	Acres	Rs.
I. Irrigation above Kalambandhi villages	666	2,343	17	6,207
II. Irrigation from tanks fed by the river Khari—(Goblaj) ..	719	3,004	827	5,749
(Galki) ..	345	552	17	1,851
III. Irrigation from the Khari sluices proper (i.e. 11 Kalambandhi villages)	6,429	35,797	6,410	30,658
Total ..	8,159	41,696	7,271	44,465

* The revenue is consolidated.

120. The assessment in respect of irrigation dependent on the Khari sluices in the Kalambandhi villages is consolidated. The average rates

per acre for land and water respectively were as under :—

—	Irrigation share.	Land share.	Total consolidated.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Government land	0 5 4	5 1 7	5 6 11
Alienated land	0 5 4	1 5 5	1 10 9

Muvalia Tank.

121. This is an important tank situated in the vicinity of the Dohad town in the Panch Mahals Collectorate, and it has a catchment area of about 39 square miles situated in a hilly tract. During the year under review the tank filled to its full capacity. The rainfall at the site of the tank was 25·97 inches compared with 27·54 inches, the average of the previous three years. The total area irrigated during the year was 631 acres and the assessment thereon amounted to Rs. 2,245. The miscellaneous revenue realised amounted to Rs. 800 against Rs. 340 in the previous year. The tank with its dam, canals, distributaries, etc., was maintained in good order at a total cost of Rs. 4,452.

Old Tanks.

122. Improvements to 4 tanks in the Ahmedabad Division and to 2 tanks in the Kaira and Panch Mahals Division and also repairs to 11 tanks in the Ahmedabad, 19 tanks in the Kaira and Panch Mahals and 43 tanks in the Surat and Broach Divisions, were carried out at total costs of Rs. 1,295 and Rs. 39,538 respectively. The area irrigated and the revenue derived from the old irrigation tanks and bunds were as under :—

Name of Collectorate.	Area irrigated.	Revenue.		
		Irrigation share.	Land share.	Total consolidated assessment.
	Acres.	Rs.	Rs.	Rs.
Ahmedabad	12,046	18,786	47,864	66,650
Kaira	629	2,091	313	2,404
Panch Mahals	270	689	1,436	2,125
Surat	1,723	5,811	28,640	34,451
Broach	820	1,481	5,015	6,496
Total ..	15,488	28,858	83,268	1,12,126

The drainage channels in the Ahmedabad, Kaira and Panch Mahals, and Surat and Broach Divisions, were maintained in good order at costs of Rs. 8,379, Rs. 4,087 and Rs. 5,313 respectively. The protective and reclamation works in the Surat and Broach Division were maintained and repaired at a total cost of Rs. 7,813.

DECCAN IRRIGATION CIRCLE.

POONA IRRIGATION DIVISION

KHAMGAON TANK.

123. This tank, which is only partially completed, received replenishment during the monsoon. The supply available was issued for the irrigation of 70 acres and the gross assessed revenue therefrom was Rs. 382, the corresponding figures for the previous year being 43 acres and Rs. 240, respectively. The maintenance and repairs charges on the tank amounted to Rs. 467.

Bandharas.

124. The subjoined table gives the area irrigated on, and the consolidated assessed revenue received from, the bandhara irrigation works in the Poona Collectorate during the year as compared with the average of the past three years :—

Particulars.	Area irrigated.	Consolidated revenue.		
		Irrigation share.	Land share.	Total.
	Acres.	Rs.	Rs.	Rs.
1932-33	2,661	13,523	5,695	19,218
Average	2,671	13,293	5,169	18,462

The expenditure incurred on these works during the year was Rs. 773.

NASIK IRRIGATION DIVISION.

KHIRDI SATHE TANK.

125. This is a small tank depending on local rains for its supply which is generally sufficient for crops grown during the monsoon and rabi seasons only. During the year under report, a satisfactory rainfall was received in the catchment of the tank and due to sufficient storage it was possible to supply water to the area under sugarcane throughout the year. On 1st April, the level of water in the tank was 15·4 feet above the sill, the corresponding contents being 52 million cubic feet. The area irrigated during the year was 534 acres, which yielded an irrigation and gross assessed revenue of Rs. 5,078 and Rs. 5,258, respectively, the figures for the previous year being 544 acres and Rs. 4,071 and Rs. 4,285, respectively. The area under sugarcane was 180 acres compared with 75 acres during the previous year. The maintenance and repair charges on the work amounted to Rs. 381.

Bandharas.

126. There are numerous bandharas situated in this division. Bandharas are small weirs built across streams in order that the level of the water flowing in the streams may be raised sufficiently to command the

land to be irrigated. There are 296 such works in the Nasik Collectorate. The total expenditure incurred on these works during the year amounted to Rs. 31,613, and the supply to the bandharas was generally sufficient owing to the timely rainfall received. The following table shows the area irrigated and the revenue received during the year under report together with the corresponding figures for the past three years :—

Year.	Area irrigated.	Consolidated revenue.		
		Irrigation share.	Land share.	Total.
	Acres.	Rs.	Rs.	Rs.
1932-33	28,752	1,94,228	52,782	2,47,010
Average	27,961	1,92,947	53,433	2,46,380

AHMEDNAGAR DIVISION.

Visapur Tank.

127. The Visapur Tank Dam built across the Hanga river, a tributary of the Bhima, was started as a famine relief work in 1896, and the work was subsequently completed in slow stages by Criminal Tribes and convict labour. This earthen dam, which is 7,440 feet long and 84 feet high, forms a lake having net capacity of 1,136 million cubic feet. It was completed in June 1927. The estimated cost of the whole scheme was Rs. 41 lakhs out of which Rs. 21 lakhs were spent on the dam and head works and the balance on the construction of the canal, distributaries, and minors. The main canal, including distributaries and minor channels, is 46 miles long. The total area under command is 95,000 acres of which 26,000 acres are irrigable, and it is estimated that 13,143 acres of two seasonal and rabi crops will be irrigated when full development of the canal is reached. The catchment area of the tank is 159 square miles and it has a capacity of 1,172 million cubic feet over the sill of the outlet. Irrigation from this tank was first started during the rabi season of 1929-30.

128. On 1st April, the water level in the tank was 30·56 feet above the sill of the outlet, the contents being 782 million cubic feet. The lowest level of 28·35 feet was reached on 27th June, the corresponding contents then being 688 million cubic feet the first, replenishment commenced on the same date and the highest level of 34 feet was reached on 22nd October, the contents then being 948 million cubic feet.

129. The area irrigated during the year, the irrigation assessment, and the gross assessed revenue, were 2,089 acres, Rs. 8,973, and Rs. 13,833, respectively, compared with 3,564 acres, Rs. 11,259, and Rs. 14,698, respectively, the average of the previous three years. The acreage under sugarcane was 24. The expenditure incurred on maintenance and repairs during the year amounted to Rs. 7,287.

KHUNTEPHAL TANK.

130. This is a very small tank with a capacity of about 57 million cubic feet, and it is situated on a small nalla about 45 miles from Ahmednagar. The tank is entirely dependent for its supply on local rains. The first replenishment of 8·55 feet was received on 20th June, the corresponding contents being 16 million cubic feet. The highest water level reached was 10·95 feet, the contents then being 27 million cubic feet. The water level on 31st March was 4·10 feet, the corresponding contents being 3 million cubic feet. The rainfall during the year was 17·17 inches compared with 28·48 inches, the average of the past three years.

CENTRAL CIRCLE.

131. The area irrigated and the gross assessed revenue on small tanks were 707 acres and Rs. 2,951 respectively. The area irrigated and the irrigation share of revenue on the old bandharas and channels in the Khandesh Division were 8,594 acres and Rs. 65,134 respectively.

SHOLAPUR DIVISION.

WADSHIVNE TANK.

132. On 1st April, the level of water in the tank was 8·63 feet above the sill of the outlet and this level gradually fell to 6·16 feet on 18th June. A replenishment was received on 19th June and this together with the further replenishments received during the period July to November caused the level to rise to 13·85 feet. Owing to the timely rainfall received the demand for water during the rabi season was inconsiderable.

During the year under report, the area irrigated was 320 acres as compared with 755 acres, the average of the past three years.

The gross assessed revenue during the year under report was Rs. 1,532 as against Rs. 3,305, the average of the past three years.

KHANDESH DIVISION.

TALWADA TANK.

133. The supply in this tank is generally uncertain. On 1st April, the contents of the tank were 28·48 million cubic feet which gradually diminished to 16·40 million cubic feet. The first replenishment was received on 4th July, and this raised the contents to 20·70 million cubic feet. The maximum storage of 103·95 million cubic feet was reached on 22nd October. The year closed with a storage of 28·64 million cubic feet of water in the tank.

134. The rainfall gauged at the tank was 23·11 inches compared with 20·63 inches, the average of the preceding three years. The area irrigated was 387 acres and the gross assessed revenue amounted to Rs. 1,419. The revenue realised from water rates during the year was Rs. 1,496, the miscellaneous realisation being Rs. 40. The expenditure incurred on the maintenance and repairs to the tank and canal was Rs. 387.

Old Works.

135. The old bandharas and channels are grouped as under :—

1. The Upper Panjhra River group including the Gondur Tank.
2. The Kan River group.
3. The Burai River group.
4. The Girna River group.
5. The Bori River group.

The area irrigated and the revenue derived from these works during the year as compared with the average of the preceding three years are shown in the following table :—

Area irrigated.		Revenue.					
		Irrigation share.		Land share.		Total.	
1932-33.	Average.	1932-33.	Average.	1932-33.	Average.	1932-33.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
8,594	8,634	65,134	60,774	13,195	12,741	78,329	73,515

136. The expenditure incurred on the maintenance and repairs to these bandharas was Rs. 1,070. An expenditure of Rs. 376 was also incurred on river and rain gauge operations.

SHOLAPUR DIVISION.

Borgaon Dam.

137. The total area irrigated during the year under report was 105 acres and the consolidated revenue assessed was Rs. 563. The irrigation share of the revenue amounted to Rs. 338 and the balance of Rs. 225 represents the land revenue.

Sap Nalla.

138. The total area irrigated during the year under report was 201 acres and the consolidated assessment was Rs. 614. The irrigation share of the revenue amounted to Rs. 369 and the balance of Rs. 245 represents the land assessment.

SOUTHERN CIRCLE.

BELGAUM DIVISION.

139. There are approximately 540 second class irrigation tanks in this division. During the year under report, repairs to 25 tanks were carried out at a cost of Rs. 10,521, and in addition to this sum an expenditure of Rs. 458 was incurred on the survey of old tanks. The area irrigated during the year was 14,629 acres, the irrigation share of the land revenue being Rs. 83,671. The total direct and indirect receipts amounted to Rs. 75,450 compared with Rs. 73,519 received during the previous year.

DHARWAR DIVISION.

140. There are approximately 1,744 tanks in this Division. During the year under report, an expenditure of Rs. 28,768 was incurred on repairs to 61 tanks and a sum of Rs. 3,974 was spent on extensions and improvements. The area irrigated was 49,862 acres and the irrigation share of the land revenue amounted to Rs. 1,75,414. The total direct and indirect receipts amounted to Rs. 1,76,207 compared with Rs. 1,51,085 received during the previous year. The working expenses were Rs. 64,325.

KANARA DIVISION.

141. In this Division there are approximately 2,128 tanks. During the year, an expenditure of Rs. 11,820 was incurred on repairs to 35 tanks and a sum of Rs. 3,250 was spent on "Surveying old tanks and preparing projects for their improvement". The area irrigated during the year was 35,395 acres and the irrigation share of the land revenue amounted to Rs. 1,03,615.

RATNAGIRI DIVISION.

142. There are only 3 tanks in this division. An expenditure of Rs. 417 was incurred on special repairs to one of the tanks, viz. the Varad Tank. The area irrigated during the year was 1,109 acres and the irrigation share of the land revenue was Rs. 6,583. The gross assessed revenue was Rs. 6,583 and the whole of this sum was realised during the year.

SECTION III.

IRRIGATION RESEARCH DIVISION.

143. In the Deccan when a large perennial canal is opened, widespread water-logging due to percolation from the canal is liable to ensue. Some of this water-logging dries out later, but the damage often extends rapidly into the valleys, and unless steps are taken to set matters right, this damage, consisting mainly of salt efflorescence, becomes permanent. The seriousness of the menace was realised as early as 1888 and the controversy regarding the relative effect of channel losses and wasteful irrigation and the best methods to adopt to safeguard the land became yearly more acute. Various experiments were carried out at the instance of the Agricultural Department but by 1913 it was clear that all the methods tried so far had failed. It was eventually decided to open a Special Irrigation Division in order that the question of canal development, especially as regards safeguarding the soil, might form the subject of investigation. In June 1916, the Division (now called the Irrigation Research Division) was formed and the work entrusted to it was to contour the commanded area, make a careful survey and classification of the surface and sub-soil, select and mark out definite areas suitable for " blocks " for perennial and other crops, design the drainage required, indicate suitable lines of communication and centres for the establishment of crushing, grinding, and refining and other machinery for trade purposes, and to make a study of the reclamation of waste lands and areas damaged by water-logging and salt efflorescence and the growth of useful timber in such tracts and along the main canal. In short, research and investigation into all the problems relating to irrigation by actual experiment, has been the sphere of work of this Division. The investigations coming within this sphere may be broadly grouped under 5 heads, viz. (1) Irrigation, (2) Irriculture or the inter-action of irrigation and agriculture, (3) soil physics, (4) Drainage and reclamation, and (5) Hydrodynamic research. The results of the more important of these investigations are published in Technical Papers from time to time.

144. The work done in the Division during the year under report may be classified under (1) soil survey and classification, (2) observation of sub-soil water levels, (3) drainage of lands damaged by water-logging and salt efflorescence, (4) formation and revision of blocks, (5) effluent irrigation, (6) irriculture at the Effluent Farm, (7) Baramati experimental salt area, (8) soil physical work, (9) hydrodynamic research. A brief account of the work done during the year under these heads is given below :—

(1) Soil Survey and Classification.

The work carried out on the demarcation of damaged areas is as under :—

Nira Right Bank Canal.—The work commenced last year was completed during the year under report. The total area demarcated from Distributary No. 4 to Distributary No. 64 amounted to 3,420 acres.

Godavari Canals.—The demarcating of 8' M.I.B's (Murum Iso-Bath) in blocks Nos. 3, 7 and 8 of the Godavari Left Bank Canal and blocks Nos. 13 and 14 of the Godavari Right Bank Canal was completed during the year.

Pravara Canals.—The demarcation of 12", 15" and 18" M.I.B's and coarse soils for the impending revision of blocks was practically completed during the year under report. Damage Classification was also done during the year.

Data regarding the suitability of various soils and sub-soils for fruit trees grown in irrigated lands was collected.

(2) Observation of Sub-soil Water Levels.

The well observation work has been continued biennially, the canals under observation being the Nira Right and Left Bank Canals, Godavari Canals and Pravara Canals. The following table gives the number of wells observed on the different canals :—

Name of canal.	Work commenced on	Work completed on	No. of wells observed.	No. of samples tested.	Remarks.
Nira Left Bank Canal.	1st July 1932 ..	....	1,700	810	
Nira Right Bank Canal	Continued ..	End of June 1932	2,400	800	
Godavari Canals ..	Do. ..	Do.	2,080	500	25 more wells observed on the upstream of the Godavari Left Bank Canal to ascertain the effect of rain-fall, etc.
Pravara Canals ..	August 1932 ..	Continued ..	3,700	600	180 wells observed in the catchment of Nilondi and Kuran Tanks to find out the effect of the percolation of water from the tanks to wells in the catchment.

(3) Drainage of Lands damaged by Water-logging and Salt Efflorescence.

The drainage schemes under execution during the year were :—

Nira Left Bank Canal.

(1) *Malegaon Drainage Scheme.*—The only work remaining to be done on this scheme was that of fixing mile and furlong stones and a few other miscellaneous items ; otherwise the work is practically complete.

Godavari Canals.

(1) Nimbgaon-Shirdi Drainage scheme—Godavari Right Bank Canal.

(2) Culvert 29 Drainage scheme—Godavari Right Bank Canal.

Pravara Canals.

Nandur-Khandala Drainage scheme—Pravara Left Bank Canal.

Mutha Right Bank Canal.

Manjri Drainage Scheme.

The total expenditure incurred on all drainage works during 1932–33, excluding repairs, was Rs. 62,450 compared with Rs. 60,928 during 1932–33. Several schemes were under preparation.

The maintenance of drainage schemes already completed was carried out, as usual, in connection with the following schemes :—

Nira Left Bank Canal.

	Cost of maintenance. Rs.
1. Culvert No. 28 Drainage scheme ..	445
2. Culvert No. 29 Drainage scheme ..	531
3. Distributary No. 24–25 Drainage scheme	373
4. Hol-Murum-Karanja Drainage scheme	2,384
5. Distributary No. 26C Drainage scheme	92
6. Malegaon Drainage scheme ..	989
	4,814
Godavari Canals.	
7. Kopergaon Drainage scheme ..	814
Pravara Canals.	
8. Nandur-Khandala Drainage Scheme..	411
Total ..	6,039

(4) Formation and Revision of Blocks.

The area of new perennial blocks measured and sanctioned on the Nira Left Bank Canal during the year under report was about 2,900 acres. The total block area sanctioned on the Nira Right Bank Canal up to the year under report was 3,635 acres, the new block area measured and sanctioned

during the year being about 1,590 acres. The total area of blocks on the Godavari Canals applied for was 13,427 acres ; of this, 10,306 acres were sanctioned by the end of April 1933. On the Pravara Canals, the area of new blocks (intermediate) applied for was about 876 acres of which some 566 acres were sanctioned. The suitability of areas for fruit blocks was also investigated on all major canals, where applied for, and the area covered was about 468 acres.

(5) Effluent Irrigation.

The rate of effluent for cane was reduced from Rs. 68 to Rs. 60 per acre during the year under report. The average discharge of effluent pumped during the year on the Mutha Right Bank Canal was 8·54 cusecs of which 7·37 cusecs were utilised for irrigation. The remaining 1·17 cusecs were disposed of on fallow land during the cold weather. The trenched area was found to be insufficient and additional bunding converting the trenched area into small compartments of $\frac{1}{8}$th to $\frac{1}{4}$th acre had to be carried out in order to accommodate the increased discharge.

The average proportion of " N " was 3·34 per 100,000 parts of effluent by weight—in other words " N " sufficient for about 1,530 acres of cane was received during the year. The gross effluent revenue assessed during the year was Rs. 60,000. In addition to the effluent canal water was used to the extent of 26·65 cusecs for mixing with the effluent and also for the irrigation of other areas, not under effluent. This gives (*a*) value per cusecs discharge of canal water excluding pazar Rs. 2,127, (*b*) including pazar Rs. 2,316 and (*c*) value per cusec of effluent at Rs. 8,140 compared with Rs. 7,418 in 1931–32.

(6) Irriculture at the Effluent Farm.

Experiments with regard to the use of effluent as a manure and other irricultural experiments, for the carrying out of which this farm is intended, were continued during the year under report.

The total expenditure on the Farm during the year amounted to Rs. 14,430 and the total receipts to Rs. 8,520.

The following experiments were carried out in connection with sugarcane effluent irrigation :—

(1) Dose experiments to ascertain the economical dose of effluent for cane.

(2) Coarse manure series to compare outturns with various types of green manures.

(3) Sugarcane variety experiments.

(4) Seasonal adsali plantation to ascertain the best month for planting adsali.

(5) Water quantity experiments to ascertain the optimum quantity of water for cane.

(6) Interval experiments.

(7) Water cum-manure experiments to study the interaction of water and manure and to ascertain the best combination of the two for optimum results.

(8) Treble green manur

(7) Baramati Experimental Salt Area on the Nira Left Bank Canal.

This area which was excessively salt-affected and physically bad was acquired for the carrying out of reclamation experiments. The total area is 160 acres of which the reclaimed land is 119 acres. The total expenditure incurred during the year was Rs. 16,323 and the total receipts amounted to Rs. 9,050.

(8) Soil Physical Work.

The following problems were investigated at the Effluent Research Laboratory :—

(1) Transpiration ratio for cane and other crops.

(2) Observations on the seasonal growth of sugarcane and maturity (rise in brix or density) before harvesting.

(3) Soil reaction in relation to growth of cane.

(4) Miscellaneous soil reclamation.

Besides routine work and the research problems, mechanical analyses were made of silt samples and water samples received from the Hydrodynamic Research Sections at the Effluent Farm and Khadakwasla.

Investigations carried out in the Research Laboratory at Baramati were primarily those in connection with the theoretical aspect of problems arising in the Baramati Experimental salt area. The problems investigated during the year under report were :—

(1) Penetration of water in a heavy soil under varying hydrostatic pressures.

(2) Soil treatment with chemical fertilizers.

(3) Flooding and intermittent irrigation.

(4) Replaceable bases in soils.

(5) Comparison of the colorimetric and electrometric methods for pH.

(6) Effect of farm yard manure and green manuring in opening up the soil.

(7) Soil reaction (pH values) and crop growth.

(8) Rate of flow of sub-soil water.

(9) Miscellaneous.

(10) General—Soil Physics.

(9) HYDRODYNAMICAL RESEARCH WORK CARRIED OUT AT DISTRIBUTARY NO. 5 (MUTHA RIGHT BANK CANAL) AND KHADAKWASLA LAKE FIFE STATIONS.

The following experiments were carried out during the year :—

(1) Experiments in connection with flumed falls.

(2) Experiments in connection with ("Still pond" *versus* "Open flow").

(3) Experiments for silt exclusion from canals with vanes in the full width Model of the Lloyd Barrage at Khadakwasla.

(4) Experiment in connection with silt regulation at offtakes.

(5) Experiments in connection with a short-crested weir model.

(6) Experiments for finding the co-efficients of discharge of the Lloyd Barrage Gates.

(7) Experiments with Gibbs Modules.

(8) Experiments with siphon spillways.

(9) Experiments with silt abrader.

(10) Laboratory experiments to ascertain the condition under which a pavement built on sand will fail and what occurs in a sand column under various pressure conditions and the critical head at which the sand begins to move.

145. The Bombay Public Works Department Technical Papers Nos. 44, 45 and 46 containing Notes on

(1) "The dissipation of energy below falls",

(2) "Silt exclusion from canals—Still pond *versus* Open flow",

(3) "Silt exclusion from canals"

were published.

STATEMENT I-E.

STATEMENT

Statement of Area irrigated by Irrigation Works in the Bombay

No.	Name of work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total	Flow	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	PRODUCTIVE.							
	Southern Circle.							
1	Gadikeri Tank	*418	..	*418	*418	..	..	..
2	Mavinkop Tank	*634	..	*634	*634	..	..	..
	Central Circle.							
3	Ekruk Tank	(1,022) 1,089	(2,158) 2,297	(3,180) 3,386	3,293	93	..	..
4	Shahada Channel	(954) 153 *658	(628) 150 *340	(1,582) 303 *998	1,301	..	13	0·99
	Total, Productive ..	1,242 *1,710	2,447 *340	3,689 *2,050	5,646	93	13	0·23
	UNPRODUCTIVE.							
	Northern Circle.							
5	Hathmati and Khari Cut Canals	§540 (D 2,066	383	923 2,066	901 1,760	22 306	..	..
6	Wangroli Tank	2,019	83	2,102	2,051	51	..	..
7	Savli Tank	2,145	2	2,147	2,131	16	..	..
8	Saiat Tank	498	..	498	498	..	..	..
9	Tranza-Nagrama Tanks	..	..	..	..	..	..	..
10	Futelao Tank	2	48	50	50	..	..	..
	Deccan Irrigation Circle.							
11	Nira Left Bank Canal ..	(22,349) 32,365	(35,021) 16,528	48,893	48,791	302	7,224	14·78
	Shetphal Tank	(2,196) 3,533	(2,580) 961	4,494	4,494	..	1,061	23·61
12	Nira Right Bank Canal ..	(10,795) 11,357	(8,393) 10,537	21,894	21,887	7	272	1·24
13	Mhaswad Tank	(6,083) 6,992	(1,675) 2,039	9,031	9,031	..	..	..
14	Mutha Canals	(6,597) 7,375	(1,064) 1,202	8,577 ‡22	8,485	92	199	2·32
	Matoba Tank	(1,029) 1,135	(1,545) 1,587	2,722	2,722	..	110	4·04
15	Kasurdi Tank	(0 1	42) 46	47	47	..	..	..
16	Shirsuphal Tank	(298) 351	(539) 605	956	956	..	..	..
17	Bhadalwadi Tank	(137) 152	(333) 516	668	668	..	..	..

I-E.

Presidency, excluding Sind, during the year 1932-33.

Average discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
..	..	..	..	..	..	..	..	16th January to 15th October.	16th October to 15th January.
..	..	..	..	..	..	..	..		
15·88	19·37	9·70	13·61	69	123	112	175	15th February to 14th October.	15th October to 14th February.
4·22	4·55	4·22	4·55	192·18	107·69	192·18	107·69	Do.	Do.
..	..	..	..	..	..	..	..		
{ †73 20 }	11	{ †43 20 }	11	7·4 (r)50·75	34·82	{ 12·55 50·75 }	34·82	15th June to 15th November.	16th November to 14th February.
112·83	1·26	112·83	1·26	17·89	65·87	17·89	65·87		
118·16	..	118·16	..	18·15	..	18·15	..		
37·13	..	37·1	..	13·41	..	13·41	..	15th June to 14th November.	15th November to 14th February.
..	..	..	..	..	..	..	..		
..	7·03	..	7·08	..	6·77	..	6·77		
(b.435	(b)391	(b)310	(b)315	(o)51	(o)90	(o)72	(o)111	15th February to 14th October.	15th October to 14th February.
30	29	30	29	(o)73	(o)88	(o)73	(o)95		
339	417	339	417	(f)32	(f)20	(f)32	(f)20	Do.	Do
71	52	71	52	(e)85	(e)33	(e)86	(e)30	Do.	Do.
167	137	(h)	(h)	(i)39	(i)8	(h)	(h)	Do.	Do.
8	9	8	9	133	166	133	166	Do.	Do.
..	..	..	..	..	..	..	..	15th June to 14th October.	Do.
(j) ..	..	..	..	(j) 85	134	85	134	Do.	Do.
..	..	..	..	79	142	79	142	Do.	Do.

STATEMENT

No.	Name of work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT—*contd.*	Acres.	Acres.	Acres.	Acres	Acres.	Acres.	
	UNPRODUCTIVE—*contd.*							
	Deccan Irrigation Circle—contd.							
	Lake Beale—Darna Dam	220	166	386	..	386	..	..
18	Godavari Right Bank Canal ..	(4,575) 8,228	(5,232) 824	9,052	9,022	30	261	2·83
	Godavari Left Bank Canal	(3,785) 6,490	(4,169) 719	7,209	7,012	197	618	8·57
19	Chankapur Tank—Girna Left Bank Canal	(2,894) 3,771	(3,069) 2,594	5,665	5,657	8	23	0·39
20	Kadwa River Works. Palkhed Canal ..	(860) 1,064	(1,131) 1,024	2,088	2,078	10	19	0·95
	Kadwa River Works. Ojhar-Tambat Canal	(425) 608	(531) 474	1,082	1,082	..	2	0·18
	Kadwa River Works. Wadali Canal ..	(430) 474	(655) 540	1,014	1,014	..	4	0·37
21	Parsul Tank	(230) 329	(511) 485	814	814	..	4	0·49
22	Pravara Right Bank Canal	(3,135) 4,287	(2,339) 463	4,750	4,750	..	224	4·72
	Pravara Left Bank Canal	(8,350) 13,469	(8,457) 2,188	15,657	15,495	162	287	1·83
23	Bhatodi Tank	(161) 168	(430) 464	632	628	4	12	1·90
	Central Circle.							
24	Koregaon Tank	(41) 41	(510) 510	(551) 551	546	5	..	..
25	Ashti Tank	(1,020) 1,024	(2,144) 2,154	(3,164) 3,178	3,125	53	..	..
26	Pathri Tank	(22) 22	(963) 965	(985) 987	944	43	..	..
27	Jamda Canals	(1,308) 1,498	(1,338) 1,485	(2,646) 2,983	2,983	..	..	..
28	Hartala Tank	(2) 2	(104) 112	(106) 114	114	..	..	..
29	Mhaswa Tank	(128) 139	(174) 178	(302) 317	317	..	6	1·89
30	Lower Panjhra River Works	(1,553) 245 *1,103	(2,081) 978 *163	(3,634) 1,223 *1,266	2,489	..	8 *318	13·10
31	Krishna Canal	(3,232) 3,936	(1,108) 1,211	(4,340) 5,147	4,524	623	30	0·58
32	Revari Canal	(84) 104	(518) 601	(602) 705	705	..	22	0·31
33	Upper Man River Works	(195) 195	(571) 579	(766) 774	770	4	60	8
34	Yerla River Irrigation Works	(203) 211	(2,410) 2,470	(2,613) 2,681	2,656	25	75	3

I-E—*contd.*

Average discharges cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
..	..	..	..	..	..	..	..		
143	176	143	176	(e) 32	(e) 30	(e) 32	(e) 30	15th February to 14th October.	15th October to 14th February.
90	113	90	113	(e) 42	(e) 37	(e) 42	(e) 37		
53	77	53	77	55	40	55	40	15th June to 14th October.	Do.
34	35	34	35	25	32	25	32		
11	18	11	18	39	29	39	29		
10	13	10	13	43	50	43	50		
(n)									
4	4	4	4	57	128	57	128	Do.	Do.
(d) 69	(d) 72	(d) 59	(d) 65	(e) 45	(e) 33	(e) 53	(e) 36	15th February to 14th October.	Do.
(d) 297	(d) 352	(d) 264	(d) 343	(e) 28	(e) 24	(e) 32	(e) 25	Do.	Do.
3	3	3	3	(k) 54	(k) 143	(k) 54	(k) 143	15th June to 14th October.	Do.
0·50	2·84	0·50	2·84	82	179	82	179	15th February to 14th October.	15th October to 14th February.
1·21	4·35	1·21	4·35	846	495	846	495	Do.	Do.
0·44	4·51	0·44	4·51	50	213	50	213	Do.	Do.
30·88	52·04	30·88	52·04	48·51	28·50	48·51	28·50	Do.	Do.
0·01	0·30	0·01	0·30	200	373·33	200	373·33	Do.	Do.
0·55	3·15	0·55	3·15	252·73	56·51	252 73	56·51	Do.	Do.
2·18	2·69	2·18	2·69	618·35	424·16	618·35	424·16	Do.	Do.
51·12	52·87	51·12	52·87	101	118	101	118	Do.	Do.
0·41	8·38	0·41	8·38	227	71	227	71	Do.	Do.
1·24	1·70	1·24	1·70	157	341	157	341	Do.	Do.
25·27	31·67	25·27	31·67	8	77	8	77	Do.	Do.

STATEMENT

No.	Name of work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT—*concld.*	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	UNPRODUCTIVE—*concld.*							
	Central Circle—contd.							
35	Chikhli Canal	(133) 144	(101) 109	(234) 253	231	22	8	3
36	Moini Tank	(160) 168	(1,255) 1,305	(1,415) 1,473	1,469	4	..	..
	Southern Circle.							
37	Gokak Canal, First Section and Storage Works.	5,513	1,381	6,899	6,703	191	..	..
38	Muchkundi Tank	12	..	12	12	..	..	..
39	Dambal Tank	.. *143	.. 7	7 *143	7 *143	..	..	..
40	Medleri Tank	28	4	32	31	1	..	..
41	Madag Tank	321	25	573	573	..	..	..
42	Aundi Tank	24	96 *190	120 *190	115 *190	5	..	..
43	Dharma Canal	405 *5,227	..	405 *5,227	405 *5,227	..	..	..
	Total. Unproductive ..	122,976 *6,473	58,875 *353	181,851 *6,826 ‡22	186,108	2,569	10,847	5·75
	Grand Total ..	124,218 *8,183	61,322 *693	185,540 *8,876 ‡22	191,754	2,662	10,850	5·79

Note.—The bold figures in brackets represent areas actually irrigated during the respective seasons and the duties have crops are irrigated. To obtain correct duties therefore these crops have to be added to the rabi areas.

(*b*) The difference between the discharges "At head" and "utilized" is due to canal water having been let into

(*c*) Low duties are due to scattered nature of irrigation. There is no irrigation in the first few miles of each

(*d*) The difference between the discharge at head and utilized in the case of the Pravara canals is due to water

(*e*) The duties on the Godavari and Pravara canals are low, due to high proportion of perennial crops and also to

(*f*) The duties on the Nira Right Bank Canal appear low as all the regulators have not yet been constructed, and as the supply is much in excess of the demand water runs to waste.

(*h*) Figures of "utilized" discharge are not available as the quantity let into the Matoba tank could not be accurately

(*i*) The low duties are due to high proportion of sugarcane and other perennial crops to the seasonal crops, and suburbs of Poona and also for industrial purposes. Water was also run to waste through the scouring sluices.

(*j*) There is generally no supply in the Kasurdi, Shirsuphal, Mataba, Bhadalwadi and Parsul tanks in the hot and other causes. The actual number of days on which the channels were in flow has therefore been taken to concentrated irrigation of seasonal crops.

(*k*) The high duties on the Bhatodi tank during the rabi season are due to concentrated irrigation.

(*l*) Includes 23 acres for hot season.

(*n*) The low duties on the Kadwa canals and the Girna Left Bank Canal are due to the scattered nature of

(*o*) The low duties on the Nira Left Bank Canal and the Shetphal Tank are due to high proportion of sugarcane

(*x*) Duty culculated on the area irrigated by the Khari Cut Canal.

* Area under consolidated assessment.

† 30 cusecs were supplied to Khari Cut Canal through Bhojwa channel and Bolh feeder for irrigation.

‡ This represents area indirectly irrigated by underground percolation from the Mutha Left Bank Canal.

§ Includes 15 acres for hot season.

I-E—*concld.*

Average discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
1·41	3·20	1·41	3·20	115	34	115	34	15th February to 14th October.	15th October to 14th February.
4·31	3·88	4·31	3·88	39	147	39	147	Do.	Do.
52·67	52·25	52·67	52·25	98·73	80·69	98·73	80·69	15th February to 14th October.	15th September to 14th January or 15th October to 14th February.
..	..	..	..	..	..	..	..	Do.	15th October to 14th February.
0·19	2·50	0·19	2·50	..	60	..	60	Do.	16th October to 15th January.
1·42	1·87	1·42	1·87	19·71	2·14	19·71	2·14	Do.	Do.
9·19	14·27	9·19	14·27	34·93	17·66	34·93	17·66	Do.	Do.
1·97	4·25	1·97	4·25	12·18	22·59	12·18	22·59	Do.	Do.
59·12	21·51	59·12	21·51	95·26	..	95·26	..	Do.	Do.
..	..	..	..	..	..	..	..		
..	..	..	..	..	..	..	..		

been calculated on these figures. In the rabi season in addition to pure rabi crops perennial and eight months'

Shetphal tank and run to waste through scouring sluices.

distributary and branch of the Mhaswad Canal.

having been run to waste through escapes.

scattered irrigation and weed trouble which cause heavy losses in transit.

Besides the irrigation is scattered and there are great losses in transit. Water was also utilised for testing the canal

measured, besides a large quantity of water was supplied for non-irrigational purposes.

Besides a large quantity of water was supplied for drinking and domestic purposes to the Poona City and Cantonment

weather season. Even during the monsoon and rabi seasons the channels are closed for days together due to rainfall for purposes of calculating average discharge and duties. The high duties on these tanks in the rabi season are due

irrigation and the timely and sufficient rainfall,

and other perennial crops

STATEMENT I-F.

Statement showing water-rates per acre in force during 1932-33 on Irrigation Works in the Bombay Presidency excluding Sind.

No.	Name of Work.	Water-rates. Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
	Works for which Capital and Revenue Accounts are kept.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	PRODUCTIVE.											
	Southern Circle.											
1	Gadikeri Tank * ..	..	..	..	..	..	..	..	..			
2	Mavinkop Tank * ..	..	..	..	..	..	..	..	..			
	Central Circle.											
3	Ekruk Tank a^{13} ..	..	A 35 B 17½	8	3	5	7	..	1 (b^6)	*Nil.*	*Nil.*	*Nil.*
4	Shahada Channel a ..	..	a^{14}	7½	2½	5	7½	..	a^{11} 1½ **2½			
	UNPRODUCTIVE.											
	Northern Circle.											
5	Hathmati Canal a^1 ..	..	(b^1)	..	D 3 E 1	3	6	..	2			
	Khari Cut Canal a^1	..	(b^1)	..	D 7 E 1	5	6	..	1 **2			
6	Wangroli Tank a^2 ..	..	(b^1)	6½	D 5 E 2½	4	6	..	1½			
7	Savli Tank a^4 ..	..	(b^1)	8	D 5 E 4	4	6	..	1½			
8	Saiat Tank a^5 ..	..	(b^1)	6½	D 4 E 2½	4	6	..	1½			
9	Tranza Nagrama Tanks. a^3	..	(b^1)	6	D 4 E 2	4	6	..	1			
10	Futelao Tank a^6 ..	..	(b^1)	..	D 4 E 2	a^7 3 a^8 2	Provisional 8	..	a^9 1	*Nil.*	*Nil.*	*Nil.*
	Deccan Irrigation Circle.											
11	Nira Left Bank Canal. Shetphal Tank (*b*) ..	§20 ¶16	M 45 C 66 B 22½ K 15	Light 8 Med. 12	Light 3 Med. 4½	Light 5 Med. 7½	Light 7 Med. 10½		(*e*)2			
12	Nira Right Bank Canal (*b*).	§20 ¶16	M 45 C 65 B 22½ K 15	Light 8 Med. 12	Light 3 Med. 4½	Light 5 Med. 7½	Ligh 7 Med. 10½		(*e*) 2			
13	Mhaswad Tank (*d*) ..	..	X	8	3	5	6	..	(*f*) 2			

STATEMENT I-F--*contd.*

No.	Name of Work.	WATER-RATES. Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
	Works for which Capital and Revenue Accounts are kept— *contd.*	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE—*contd.*											
	Deccan Irrigation Circle —contd.											
14	Mutha Canals and Matoba Tank (*c*)—											
	Sugarcane under the Mutha Canals within the Poona City and Suburban Municipal and Cantonment limits or within one mile of those limits.	..	50	Light 8 Med. 12	Light 3 Med. 4½	Light 5 Med. 7½	Light 7 Med. 10½	..	(*e*) 2			
	On all remaining land commanded by both the canals.	..	M 45							*Nil.*	*Nil.*	*Nil.*
	Pan gardens ..	..	C 66									
	Perennial crops other than sugarcane and pan gardens.	..	B 22½									
	Pomegranates ..	..	15									
	Matoba Tank ..	..	(*g*)									
15	Kasurdi Tank (*d*) ..	..										
16	Shirsuphal Tank (*d*)..	..	X	8	3	5	6	..	(*f*) 2	*Nil.*	*Nil.*	*Nil.*
17	Bhadalvadi Tank (*d*)..	..										
18	Godavari Right Bank Canal (*b*), Godavari Left Bank Canal (*b*).	§20 ¶16	M 45 C 66 B 22½ K 15	Light 8 Med. 12	Light 3 Med. 4½	Light 5 Med. 7½	Light 7 Med. 10½	..	(*e*) 2			
19	Chankapur Tank— Girna Left Bank Canal (*d*).	..	X	8	3	5	6	..	(*f*) 2			

STATEMENT I-F—*contd.*

No.	Name of Work.	Water-rates. Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
	Works for which Capital and Revenue Accounts are kept—*contd.*	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE—*contd.*											
	Deccan Irrigation Circle—concld.											
20	Kadwa River Works (*d*)—											
	Waghad Tank ..	..										
	Palkhed Canal ..	..	X	8	3	5	6	..	(*f*) 2	*Nil.*	*Nil.*	*Nil.*
	Ojhar-Tambat Canal	..										
	Wadali Canal ..	..										
21	Parsul Tank (*d*) ..	..										
22	Pravara Canals (*b*) ..	§20	M 45	Light	Light	Light	Light	..	(*e*) 2			
		¶16	C 65	8	3	5	7					
			B 22½	Med.	Med.	Med.	Med.					
			K 15	12	4½	7½	10½					
23	Bhatodi Tank (*d*) ..	..	X	8	3	5	6	..	(*f*) 2			
	Central Circle.											
24	Koregaon Tank a[13] ..	..	A 32 B 16	7	3	4	6	..	(*b*[6]) 1			
25	Ashti Tank a[18] ..	..	A 32 B 16	7	3	4	6	..	(*b*[6]) 1			
26	Pathri Tank a[18] ..	..	A 32 B 16	7	3	4	6	..	(*b*[6]) 1			
27	Jamda Canals a[16] ..	..	B 10 A 16	5 a[17]d	2	3	5	..	a[14]			
28	Hartala Tank a[16] ..	..	B 9 A 12	5 a[17]7	2	3	4	..	1			
29	Mhasva Tank a[16] ..	..	B 9 A 12	5 a[17]7	2	3	4	..	a[14] 1			
30	Lower Panjhra River Works. a[12]	..	A 30 B 15	8	3	5	7	..	(*b*[6]) 1½ **3			
31	Krishna Canal a[15] ..	..	A 32 B 16	8	3	5	8	..	a[14]			
32	Revari Canal a[15] ..	..	A 24 B 12	6	2	4	6	..	a[14]			
33	Upper Man River Works. a[15]	..	A 24 B 12	6	2	4	6	..	a[14]	*Nil.*	*Nil.*	*Nil.*
34	Yerla River Irrigation Works. a[15]	..	A 26 B 13	6½	2	4½	6½	..	a[14]			
35	Chikhli Canal a[15] ..	..	A 24 B 12	6	2	4	6	..	a[14]			
36	Maini Tank a[15] ..	..	A 24 B 12	6	2	4	6	..	a[14]			

STATEMENT I-F—*concld.*

No.	Name of Work.	Water-rates.							Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
		Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.				
	Works for which Capital and Revenue Accounts are kept —*concld.*	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE —*concld.*											
	Southern Circle.											
37	Gokak Canal, 1st Section and Storage Works. (*u*)	..	(b^1) 27½ (b^2) 20	8	3	5	15	..	2	*Nil.*	*Nil.*	*Nil.*
38	Muchkundi Tank (*s*)..	..	(b^1) 10 (b^2) 5	..	2	2	5	..	1			
39	Dambal Tank (*w*) ..	..	(*x*) 14	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
40	Medleri Tank (*w*) ..	..	(*x*) 14	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
41	Madag Tank (*w*) ..	..	(*x*) 12	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
42	Asundi Tank (*w*) ..	..	(*x*) 14	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
43	Dharma Canal (a^{10}) ..	..	..	..	4½	..	..	..	(*j*) 1 (*k*) 2			

NOTE.—(1) For lift irrigation in the Deccan Irrigation Circle the orders contained in G. R. No. 4771/27, dated 23rd December 1931, are that lift from Budkis should not be allowed at all in areas under the flow command of a canal and that in other areas it may be allowed only when the supply of water for irrigation is in excess of the demand at half the flow rates for all crops other than sugarcane for which full rate should be charged.

(2) For lift irrigation half the ordinary rates are charged in other circles.

(3) Double or treble the ordinary rates are charged as penal rates for taking water without permission.

(4) Leakage or percolation rates are the same as ordinary rates.

(5) Water-rates for non-irrigational purposes are charged at the rates sanctioned by Government in each case subject to the minimum rates fixed in G. R. No. 851, dated the 7th April 1924.

(6) In the D. I. C. monsoon or two seasonal crops which take pre-seasonal waterings between the 25th April and the break of the monsoon are charged the following water rates per acre according to the date of first watering applied for and sanctioned, *vide* G. R. No. 5602/27, dated 9th December 1931 :—

From the date	Rate for light type of crops.	Rate for medium type of crops.
	Rs.	Rs.
25th April	5	7½
5th May	4	6
15th May	3	4½

(7) A reserve rate of Rs. 3 per acre as a minimum rate has been sanctioned for lands let out for cultivation in the basin of Lake Beale—*vide* G. R. No. 2484, dated 12th June 1925.

(8) A flat rate of Rs. 2-8-0 per acre of culturable area has been sanctioned up to 14th February 1934 for the supply of water from the irrigation channel of Sangur village to the irrigators who have not suffered in any way from land acquisition for the Lloyd Dam—*vide* G. R. No. 1849/27, dated 5th January 1932.

* Lands wholly assessed at consolidated rates.

§ Block rate for blocks in 1: 3 proportion of sugarcane.

† Block rate for blocks in 1: 4 proportion of sugarcane.

** For single waterings crops for which no application for irrigation throughout the season was previously submitted.

A—For sugarcane and pan gardens.

B—For perennial crops other than sugarcane.

C—For pan gardens for the whole year. If water is given for part of the year the charge will be on the basis of thrice the medium seasonal rates for the seasons concerned—*vide* G. R. No. 5502/27, dated 9th December 1931.

D—For rice.

E—For monsoon crops other than rice.

K—For pomegranates.

M—For Sugarcane.

X—For sugarcane and pan gardens double the seasonal rates and for other perennial crops single seasonal rates shall be charged.

(*b*) Rate for sugarcane and block rates to be in force up to 14th February 1933—*vide* G. R. No. 5602/27, dated 9th December 1931. The corresponding rates for the year ending 14th February 1934 are Rs. 45 and Rs. 19 and Rs. 16, respectively—*vide* G. R. No. 5602/27, dated 28th November 1932. The rates for crops other than sugarcane are to be in force from 15th February 1931 to 14th February 1934—*vide* G. R. No. 5602/27, dated 9th December 1931.

(*c*) Rates for sugarcane within the Poona City and Suburban Municipal and cantonment limits or within one mile of those limits and for sugarcane in other areas to be in force up to 14th February 1934—*vide* G. Rs. Nos. 5602/27, dated 9th December 1931 and dated 28th November 1932. The rates for crops other than sugarcane to be in force from 15th February 1931 to 14th February 1934—*vide* G. R. No. 5602/27, dated 9th December 1931.

(*d*) Rates sanctioned in G. R. No. 5602/27, dated 9th December 1931, to be in force with effect from 15th February 1931 to 14th February 1934.

(*e*) The single-watering rate applies to pre-seasonal and post-seasonal waterings to sanctioned crops; in other cases full seasonal rate shall ordinarily be charged whether one or more waterings be taken.

(*f*) The single-watering rate of Rs. 2 is for one watering only. If two or more waterings are taken full seasonal rate shall be charged.

(*g*) For sugarcane the short-term cane rates as per scale sanctioned in G. R. No. 8670, dated 13th January 1927 (which may be in force on major irrigation works), for pan gardens the same rate as on the Mutha Canals and for other perennials single medium seasonal rates will be charged—*vide* G. R. No. 5602/27, dated 9th December 1931.

(*i*) From 15th June to 15th October.

(*k*) From 16th October to 14th June.

(*l*) From 15th February to 15th June.

(*m*) From 15th June to 15th October or 15th July to 30th November.

(*n*) From 15th October to 15th February.

(*s*) In force up to 15th February 1937—*vide* G. R. No. 5459/27, dated 13th May 1931 :—

(*u*) In force up to 14th February 1934—*vide* G. R No. 466/27, dated 3rd March 1932 :—

(*w*) Rates sanctioned for the period of five years ending 31st March 1935—*vide* G. R. No. 6095, dated 22nd October 1924 and G. R. No. 3187/27, dated 22nd August 1929.

(*x*) For sugarcane, betel leaves, etc., for 12 months.

(*y*) For eight months from 15th June to 15th February.

(*z*) For eight months from 15th October to 15th June or 1st August to 31st March.

[a] Rates sanctioned in G. Rs. Nos. 836, dated 8th October 1923, 836, dated 23rd April 1924, 836, dated 29th July 1924, and 1590/27, dated 19th June 1928, are to be in force up to 14th February 1934.

[a1] Rates sanctioned in G. R. No. 4855, dated 23rd December 1927, are to be in force up to 14th February 1937—*vide* G. R. No. 5956/27, dated 22nd October 1931.

[a2] Rates sanctioned in G. Rs. Nos. 825, dated 30th August 1924, and 825, dated 1st November 1926, are to be in force up to 15th June 1935—*vide* G. R. No. 2851/27, dated 4th July 1929.

[a3] Rates to be in force up to 31st July 1938—*vide* G. R. No. 679/27, dated 11th October 1932.

[a4] Rates sanctioned in G. Rs. Nos. A-I-1335, dated 14th June 1910, 815, dated 18th February 1925, and 815, dated 13th November 1926, are to be in force up to 15th June 1935—*vide* G. R. No. 2894/27, dated 19th June 1929.

[a5] Rates sanctioned in G. Rs. Nos. A-I-309, dated 15th February 1911, 5412, dated 15th December 1926, and 2835/27, dated 4th October 1929, are to be in force up to 15th June 1935.

[a6] Rates sanctioned in G. O. No. A-I-9945, dated 12th October 1917, are to be in force up to 31st March 1935—*vide* G. R. No. 2691/27, dated 29th April 1929.

[a7] For ordinary rabi.

[a8] For restorative crops grown after rice.

[a9] In either kharif or rabi season.

[a10] Rates sanctioned in G. R. No. 293/27 of 9th August 1927 are to be in force up to 31st March 1937—*vide* G. R. No. 293/27, dated 14th February 1931.

[a12] Rates sanctioned in G. R. No. 7736, dated 30th October 1925, are to be in force up to 14th February 1934—*vide* G. R. No. 5602/27, dated 15th February 1933.

[a13] Rates in force up to 15th February 1934—*vide* G. Rs. Nos. 6529, dated 17th January 1925, and 1912/27, dated 27th July 1928 and 9th June 1930.

[a14] For sugarcane and pan gardens double the ordinary rates are charged.

[a15] In force up to 15th February 1934—*vide* G. O. No. A-I-16033, dated 8th December 1919, G. R. No. 3151/27, dated 3rd January 1930 and G. R. No. 5602/27, dated 15th February 1933.

[a16] Rates in force till 14th February 1934—*vide* G. R. No. 5602 27, dated 15th February 1933.

[a17] Water rate for late eight months, *i.e.*, from 15th October to 14th June.

[*b*1] Rate for perennial 12 months.

[*b*2] Rate for perennial 8 months.

[*b*4] Single seasonal rates are charged—*vide* G. R. No. 3343 27, dated 8th October 1929.

[*b*6] For sugarcane the single-watering rate is Rs. 2 with effect from 15th February 1932—*vide* G. M. No. 6275/27-I.B., dated 23rd February 1932.

Administration Report of Irrigation Works in the Deccan and Gujarat for 1932-33 : Review of —.

GOVERNMENT OF BOMBAY.

PUBLIC WORKS DEPARTMENT.

Resolution No. P. 22/9472.

Bombay Castle, 6th June 1934.

RESOLUTION OF GOVERNMENT.

The irrigation works dealt with in this Report which covers the period 1st April 1932 to 31st March 1933 fall under two categories, viz. (*i*) tanks and canals for which capital and revenue accounts are kept, and (*ii*) small tanks, bandharas and drainage channels, for which neither capital nor revenue accounts are kept. The works included under (*i*) are described in detail in Section I of the Report. The works mentioned under (*ii*) are small and numerous and a brief account of them is given in Section II of the Report.

2. The total capital outlay on works for which capital and revenue accounts are kept, up to the end of the year under review, amounted to Rs. 10,56,59,658.

Including an area of 8,875 acres, on which a consolidated water and land assessment is levied, the total area irrigated was 194,438 acres, as compared with 207,151 acres in the previous year.

The gross assessed revenue amounted to Rs. 24,42,470 compared with Rs. 24,22,599 during the previous year and Rs. 27,84,389, the average of the past three years.

The unrealised balance of revenue demands at the close of the year amounted to Rs. 24,58,357. A portion of this amount has since been recovered and steps have been taken to effect the recovery of the balance outstanding.

The working expenses amounted to Rs. 15,77,914 compared with Rs. 15,35,282 in the previous year.

The net revenue (after deducting working expenses) amounted to—

		Rs.
(*i*) On the basis of assessment	..	8,64,556
(*ii*) On the basis of realisations	..	10,83,699

as compared with Rs. 8,87,317 and Rs. 3,45,837 respectively, during the previous year.

The statement embodied in paragraph 14 of the Report shows the financial results of the more important works for which capital and revenue accounts are kept.

3. The total area irrigated by works for which neither capital nor revenue accounts are kept was 172,059 acres, and the gross revenue obtained was Rs. 7,64,440. The total expenditure incurred on improvements and repairs to these works amounted to Rs. 3,87,461.

By order of the Governor in Council,

J. R. PHILLIPS,
Deputy Secretary to Government,
Irrigation and Railways.

To

The Finance Department.
The Revenue Department.
The Commissioner in Sind.
The Commissioner, Northern Division.
The Commissioner, Central Division.
The Commissioner, Southern Division.
The Senior Superintendent of Land Records, Southern Circle.
The Director of Agriculture.
The Commissioner of Labour and Director of Information.
The Chief Engineer in Sind.
All Superintending Engineers of Circles.
All Collectors in the Presidency proper (except those of Bombay, Thana, Kolaba and Bombay Suburban District).
The Accountant General, Bombay.
The Audit Officer, Lloyd Barrage and Canals Construction.
All Executive Engineers in charge of Irrigation Works in the Deccan and Gujarat.
The Secretary to the High Commissioner for India (by letter).

BOMBAY: PRINTED AT THE GOVERNMENT CENTRAL PRESS.

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MAP OF DECCAN & GUJARAT

TO ACCOMPANY THE IRRIGATION ADMINISTRATION REPORT

1932-33

SCALE 40 MILES TO 1 INCH

NORTHERN CIRCLE

AHMEDABAD DIVISION.

AHMEDABAD DISTRICT.

Works in Operation.

1. Mahiyarni Canal
2. Rakt Reservoir
3. Pirana Defluent Drainage
4. Viramgam Drainage
5. Sarangpur Drainage
6. Ghoda Feeder
7. Ogna Drain
8. Godhani Group Drain
9. Chekhla Drain
10. Khari Cut
11. Chandola Tank
12. Vasai Reservoir
13. Timba Tank
14. Sharpia Feeder
15. Kasara & Wemasa Drainage at Dholka
16. Odhan-Sukpur Drain
17. Halsapur Drain

KAIRA DISTRICT.

Works in Operation.

18. Khari Reservoir
19. Gothaj Tank
20. Gelat Tank
21. Hirapur Reservoir
22. Nalka Reservoir

KAIRA & PANCH MAHALS DIVISION

(1) KAIRA

Works in Operation	Incomplete Works
1. Rasar Drain	23. Patej Tank
2. Tiraja Tank	
3. Nagarwa Tank	
4. Anand Mogri Drain	
5. Katosanal Drain	
6. Sarai Tank	
7. Kanjri Tank	
8. Mangrol Tank	
9. Phodsar Tank	
10. Mansol Tank	
11. Tarapur Gated Drain	

(11) PANCH MAHALS.

12. Mandelao Tank	24. Kanalao Tank
13. Kanadwa Tank	25. Gowala Tank
14. Motisalo Tank	26. Gamdi Tank
15. Gothalo Tank	27. Kanjeta Kotalli Tank
16. Matar Tank	28. Wada Talao Tank
17. Dhanpur Tank	29. Sasi River Project
18. Dangria Tank	
19. Surliya Tank	
20. Chhotabhai Ambli Tank	
21. Pavia Tank	
22. Wasnol Super Tank	

SURAT & BROACH DIVISION.

(1) BROACH.

Works in Operation.

1. Kora Mashighat Jetties	33. Qra-Vichod-Nadalpur Channel
2. Nehar-ood-Dowlut Drainage Channel	16. Kahali Channel
3. Nandhera-Nahar Drainage Channel	17. Waghaura Drainage Channel
4. Amreepur-Vadtal Drainage Channel	18. Adol Majal Channel
5. Vadtal Drainage Channel	19. Amla Channel
6. Nandhera Drainage Chnl.	20. Kora Mashighat Jetties Road
7. Chattral from Ghat Vide to	21. Hansot ,, do ,,
,, ,, Chattral near Dabu	22. Mandvi ,, do ,,
8. Kanjan Dola Drainage Chnl.	23. Chattral from Ghat Vide to at Lakhigam
9. Gramood Drainage Chnl. re-routing Dandi and Shivadhia Drainage Channel	24. ,, ,, ,, ,, do ,, at Hastapur
10. Mandvi Drainage Channel	25. ,, ,, ,, ,, do ,, at Gandhar
11. Gandhar Amalsad Channel	26. Bund at Kadi Village
12. Wadhwan Channel	27. ,, ,, Umrakh Village
13. Jolva Channel	28. do ,, Nada and Dasta Villages
	29. ,, ,, Ghol
	30. ,, ,, Sora

(2) SURAT.

Works in Operation.

31. Mortana Channel	32. Bund between Kapsai and Kosbana Villages
33. Waghai Protective Works	

CENTRAL CIRCLE

POONA DIVISION

Works in Operation.

1. Krishna Canal.
2. Nimgiri Canal

SHOLAPUR DIVISION.

Works in Operation.

1. Ekruk Tank	6. Mayni Canal
2. Kohi ,,	7. Upper Mar River Works
3. Pathri do	8. Tirth Head Works
4. Hatidahare Tank	9. Tirth Head Works
5. Hiregaon ,,	Nalbi Tank

5. Chikhli Canal.

Incomplete Work.

10. Budhihal Tank	12. Gorapura, Tank
11. Nimgi Tank	13. Mirgi Tank

KHANDESH DIVISION.

Works in Operation.

1. Mukti Tank	7. Bar River Group
2. Tarankale do	8. Tanda L. B. Canal
3. Lower Dudhna Minor Tributaries	9. Nagan ,, ,,
4. Upper Purdesh Govt Group	10. Mhasves Tank
5. Lower Purdesh Govt Group	11. Mandala do
6. Nimgi River Group	

Incomplete Work.

1. Tapi Peninsula Canal

DECCAN IRRIGATION CIRCLE

NASIK IRRIGATION DIVISION

Works in Operation.

1. Waghad Tank	11. Mhasai Group
2. Kashyapi Tank	12. Gadanadi do
3. Khadkoshi Tank	13. Darna do
4. Girna L. B. Canal	14. Gangi do
5. Patharia do	15. Nandur do
6. Waldevi do	16. Mahadeoji Group
7. Ojhar Tumbari Canal	17. Darna Bifurcal (Lake Scale)
8. Pathri Tank	18. Girna L. B. Canal
9. Girna Group	19. do L. B. do
10. Arjun Group	

Work under Construction—Incomplete Work

20. Odki Tank

AHMEDNAGAR DIVISION.

Works in Operation.

1. Mula L. B. Canal	4. Khirawadi Tank
2. ,, do ,,	5. Pimpalgaon Tank
3. Lohi Group	

Work under Construction and in Operation.

6. Thanga Tank

POONA IRRIGATION DIVISION

Works in Operation.

1. Lake Fife	7. Kasardi Tank
2. Mutha R. B. Canal	8. Sonegaon Tank
3. Mutha L. B. do	9. Shirasvadi Tank
4. Nira L. B. Canal	10. Shahpur Tank
5. Mandki Tank	

Incomplete Work.

11. Varasai Tank

NIRA RIGHT BANK CANAL DIVISION

Work under Construction and in Operation.

1. Lyad Tail of Bhatghar (Nira Lake Waters)
2. Nira R. B. Canal (from 30th Nov 1932)

Work in Operation.

3. Khanwad Tank

Incomplete Work.

4. Bhambavdi Tank

SOUTHERN CIRCLE

BELGAUM DIVISION

Works in Operation.

1. Gokak Canals in Saitwar and Shingar Wards.
2. Gadhwar Tank.

DHARWAR DIVISION

Works in Operation.

1. Dudhar Tank	4. Asundi Tank
2. Madlur ,,	5. Bhairidevarkoppal Lawan
3. Hosur ,,	6. Shirasvadi Tank

KANARA DIVISION

Work in Operation

1. Mavinhalla Tank

REFERENCES

NORTHERN CIRCLE

- Ahmedabad Division
- Kaira and Panch Mahals Division
- Surat and Broach Division

CENTRAL CIRCLE

- Poona Division
- Sholapur Division
- Khandesh Division

DECCAN IRRIGATION CIRCLE

- Nasik Irrigation Division
- Ahmednagar Division
- Poona Irrigation Division
- Nira Right Bank Canal Division

SOUTHERN CIRCLE

- Belgaum Division
- Dharwar Division
- Kanara Division
- Balaghat Division

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